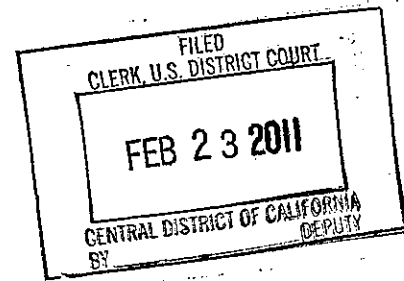


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Attorneys for Plaintiffs, SULZER MIXPAC
USA, INC. and SULZER MIXPAC AG

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

SULZER MIXPAC USA, INC. and
SULZER MIXPAC AG,

Plaintiffs,

vs.

DENT MART INT'L INC., and KENNY
S. LEE and L&C DENTAL SUPPLY,
INC. and SUNG H. LEE and SAEYANG
MICROTECH CO. LTD.

Defendants.

Case No. **11-00305-AG(FMOX)**

COMPLAINT FOR:

**(1) TRADEMARK COUNTERFEITING
UNDER 15 U.S.C. §1114,
(2) INFRINGEMENT OF
TRADEMARK AND TRADE DRESS
UNDER 15 U.S.C. §1125(a),
(3) UNFAIR COMPETITION UNDER
15 U.S.C. § 1125(a),
(4) FALSE DESIGNATION OF ORIGIN
UNDER 15 U.S.C. § 1125(a),
(5) COMMON LAW TRADEMARK
AND TRADE DRESS
INFRINGEMENT,
(6) COMMON LAW UNFAIR
COMPETITION,
(7) PATENT INFRINGEMENT ('772
PATENT), AND
(8) PATENT INFRINGEMENT ('363
PATENT)**

DEMAND FOR JURY TRIAL

1 Plaintiffs Sulzer Mixpac USA, Inc. and Sulzer Mixpac AG (collectively
2 “Mixpac” or “Plaintiffs”) for their complaint against defendants (Defendants”) seeking
3 damages, injunctive relief, and other relief for trademark counterfeiting , trademark,
4 trade-dress and patent infringement, allege as follows:

5 **PARTIES**

6 1. Plaintiff Sulzer Mixpac USA, Inc. is a New Hampshire corporation with
7 its principal place of business at 8 Willow Street, Salem, New Hampshire.

8 2. Plaintiff Sulzer Mixpac AG is a Swiss corporation with its principal place
9 of business at Ruetistrasse 7, CH-9469 Haag, Switzerland.

10 3. Defendant Dent Mart Int’l Inc. is a California corporation, having its
11 principal place of business at 720 N. Valley St. #D, Anaheim, California 92806.

12 4. Defendant Kenny S. Lee is an individual and president of Dent Mart Int’l
13 Inc. having a residence address at 16324 Fieldcrest Ct., La Mirada, California 90638.

14 5. Defendant L&C Dental Supply, Inc. is a California corporation, having
15 its principal place of business at 720 N. Valley St. #D, Anaheim, California 92806.

16 6. Defendant Sung H. Lee is an individual and president of L&C Dental
17 Supply, Inc., having an address at 720 N. Valley St. #D, Anaheim, California 92806.

18 7. Defendant Saeyang Microtech Co. Ltd. is a Korean corporation having its
19 principal place of business at 100-39, Galsan-Dong, Dalseo-Ku, Daegu, Korea.

20 **JURISDICTION AND VENUE**

21 8. This court has jurisdiction over Mixpac’s patent infringement claims
22 under 28 U.S.C. §§ 1331 and 1338(a). This court has jurisdiction over Mixpac’s
23 trademark and trade-dress infringement claims under 28 U.S.C. §§ 1331 and 1338(a)
24 and 15 U.S.C. § 1121.

25 9. This court has personal jurisdiction over Defendants because, as will be
26 further explained, they are transacting or have transacted business in California, and
27 have sold, offered for sale, distributed, or advertised products that infringe Mixpac’s
28 trademark and trade-dress or U.S. Trademark Registration Nos. 3,762,233 and

1 3,762,232 in California. Defendants also have made, used, imported, sold, or offered
2 for sale in the United States, including within California, products which infringe
3 Mixpac's United States Patent No. 5,918,772 (the "772 Patent"), or United States
4 Patent No. 6,186,363 (the "363 Patent"). In particular, Defendants recently imported
5 a shipment of counterfeit mixing tips that were seized by U.S. Customs and Border
6 Protection on December 20, 2010 at the Port of Los Angeles.

7 10. Defendants Dent Mart Int'l Inc. and/or L&C Dental Supply, Inc. also
8 maintain a website at <http://www.dentmartlc.com/> which advertises the Defendants'
9 infringing HP Mixing Tips, and lists a telephone number and email address for
10 customers to contact them and order the Mixing Tips in California. A true and correct
11 copy of Defendants' web pages and advertisements and photographs of infringing
12 mixing tips are attached as **Exhibit A**.

13 11. Defendant Kenny S. Lee is president of and/or controls Dent Mart Int'l
14 Inc. and/or L&C Dental Supply, Inc. and takes an active role in the activities of the
15 defendant corporations. Mr. Lee has personally directed and actively participated in
16 the knowing and willful copying, manufacture, importation, offer for sale, sale, and
17 importation into California of infringing mixing tips. Mr. Lee willfully and knowingly
18 directed and participated in the infringing activity and profited from the manufacture
19 and sale of infringing mixing tips. Mr. Lee has used the defendant corporation as his
20 alter ego for the purpose of the infringing activities alleged. For the same reasons that
21 this court has personal jurisdiction over the corporate defendants, it also has personal
22 jurisdiction over Mr. Lee who has used the corporations to commit tortious acts that
23 have consequences in California, such as infringing the Plaintiffs' trademarks in its
24 mixing tips and the '772 Patent and the '363 Patent.

25 12. Defendant Sung H. Lee is president of and/or controls L&C Dental
26 Supply, Inc. and/or Dent Mart Int'l Inc. and takes an active role in the activities of the
27 defendant corporations. Mr. Lee has personally directed and actively participated in
28 the knowing and willful copying, manufacture, importation, offer for sale, sale, and

1 importation into California of infringing mixing tips. Mr. Lee willfully and knowingly
 2 directed and participated in the infringing activity and profited from the manufacture
 3 and sale of infringing mixing tips. Mr. Lee has used the defendant corporation as his
 4 alter ego for the purpose of the infringing activities alleged. For the same reasons that
 5 this court has personal jurisdiction over the corporate defendants, it also has personal
 6 jurisdiction over Mr. Lee who has used the corporations to commit tortious acts that
 7 have consequences in California, such as infringing the Plaintiffs' trademarks in its
 8 mixing tips and the '772 Patent and the '363 Patent.

9 **BACKGROUND**

10 *The Mixpac three part mixing system*

11 13. Mixpac is the exclusive manufacturer in Switzerland of a patented three-
 12 part system for mixing two-part adhesives for dental and industrial applications. The
 13 system consists of 1) a dispenser, like a caulking gun, 2) a cartridge containing a two
 14 part chemical such as an epoxy having a catalyst and a resin, and 3) a mixing tip that
 15 mixes the chemicals before they are applied for making, for example, an impression or
 16 mold for teeth.

17 *The Mixing Tips Colored Dome Mark and Trade Dress*

18 14. Mixpac has since at least as early as 1997 used a distinctive dome shape
 19 and color coded design Mark for its mixing tips. (hereinafter "Mixpac Colored Dome
 20 Mark"). A true and correct copy of the Mixpac Colored Dome Mark is attached as
 21 **Exhibit B**.

22 15. The Colored Dome design Mark has been used to identify Mixpac's
 23 dental mixing system and mixing tips.

24 16. Mixpac's trade dress also consists of at least the line of mixing tips with
 25 six pleasing "candy-like" colors of yellow, teal/green, blue, pink, purple and white to
 26 match the corresponding colored cartridge cap, as well as the orange corkscrew-like
 27 element ("Mixpac Trade Dress"). Attached as **Exhibit C** is a true and correct copy of
 28 a picture showing the Mixpac Trade Dress and the Mixpac Colored Dome Mark.

1 17. The Mixpac Colored Dome Mark and Trade Dress is non-functional. It is
2 not essential to the product's purpose, and it is not dictated by concern for cost
3 efficiency. This is evidenced by the fact that many other companies in the industry
4 also have different designs for their dental products, none of which include the design
5 features of the Colored Dome Mark or the Mixpac Trade Dress.

6 18. The Mixpac Colored Dome Mark and Mixpac Trade Dress is distinctive
7 and identifies a single source. Additionally, over the last decade, the Mixpac Colored
8 Dome Mark and Mixpac Trade Dress have acquired secondary meaning as the relevant
9 public has come to associate the Colored Dome Mark and Mixpac Trade Dress with a
10 single source, Mixpac. Purchasers choose mixing tips based on the Colored Dome
11 Mark and Mixpac Trade Dress.

12 19. Defendants seek to capitalize on the success of the Mixpac mixing tips by
13 copying the distinctive Colored Dome Mark and Mixpac Trade Dress, including each
14 of the candy colors that are used with the color coding system and intentionally
15 confuse purchasers into believing the counterfeit products are manufactured or
16 licensed by Mixpac.

17 20. Defendants' copied products are of lesser quality and safety and
18 reliability, and threaten Mixpac's reputation in its product, to the detriment of Mixpac
19 and the public.

20 21. Defendants make use, sell, offer for sale or import, market, distribute,
21 offer for sale, or sell products that infringe the Colored Dome Mark and Mixpac Trade
22 Dress.

23 ***The Colored Dome Mark Federal Trademark Registrations***

24 22. Mixpac was awarded U.S. Trademark Registrations for the yellow and
25 teal/green colored mixing tips, U.S. Trademark Registration Nos. 3,762,232 and Reg.
26 No. 3,762,233 respectively. True and correct copies of the registration certificates are
27 attached as **Exhibit D**.

28 ///

Mixing Tip Patents

23. Mixpac owns U.S. patents for the dispenser, cartridge and mixing tips.

24. On July 6, 1999, the '772 Patent was duly and legally issued for an invention entitled "*Bayonet Fastening Device For The Attachment Of An Accessory To A Multiple Component Cartridge Or Dispensing Device.*" The '772 Patent is assigned to Sulzer Mixpac AG. A true and correct copy of the patent is attached as **Exhibit E**.

25. On February 13, 2001, the '363 Patent was duly and legally issued for an invention entitled "*Bayonet Fastening Device For The Attachment Of An Accessory To A Multiple Component Cartridge Or Dispensing Device.*" The '363 Patent is assigned to Sulzer Mixpac AG. A true and correct copy of the patent is attached as **Exhibit F**.

26. Defendants have sold, offered for sale and delivered into this Judicial district mixing tips that infringe the Colored Dome Mark and Mixpac Trade Dress and the '772 and '363 patents.

The Southern District of New York and this Court have together entered several Restraining Orders and numerous Consent or Default Judgments and Preliminary Injunctions Which Confirm the Validity of the Colored Dome Mark and Mixpac Trade Dress and the '772 and '363 Patents.

27. Mixpac gained a Temporary Restraining Order against all defendants against further infringement of the Colored Dome Mark and Mixpac Trade Dress on December 1, 2008, (Docket entry No. 4), and the Court later entered six consent or default judgments which confirm the validity and infringement of the Colored Dome Mark and Mixpac Trade Dress and the '772 and '363 patents. See *Sulzer Mixpac v. TPC Advanced Technologies, Inc.*, 08 Civ. 10364 (DC), Docket entry Nos.; 23, 24, 25, 35, 36, and 41. On November 30, 2009 in *Sulzer Mixpac v. Ritter GmbH, NSJ, and Peng Waves*, 09 Civ. 9705 (DAB) the Court issued a TRO confirming the validity and infringement of Mixpac's Colored Dome Mark, Trade Dress and the '772 and '363 patents, followed by the issuance of a Preliminary Injunction on December 14, 2009 confirming the same. The court in *Sulzer Mixpac v. Crown Dental Supply Inc.*, 10 Civ.

1 8911 (DAB) entered a Preliminary Injunction in favor of Plaintiffs on November 30,
2 2010.

3 28. This Court, on November 18, 2010, entered a Consent Decree and
4 Permanent Injunction in *Sulzer Mixpac USA Inc et al v. TC Dental and Medical*
5 *Supplies Inc et al*, SACV10-1518-JVS (MLG x) which further confirmed the validity
6 and infringement of the Colored Dome Mark and Mixpac Trade Dress and the '772
7 and '363 patents.

8 **FIRST CLAIM**

9 **Trademark Counterfeiting Under 15 U.S.C. §1114**

10 29. Mixpac realleges and incorporates herein by reference the allegations in
11 paragraphs 1 through 28 of its complaint.

12 30. Defendants have advertised, offered for sale, distributed or sold mixing
13 tips which simulate and are substantially indistinguishable from Mixpac's yellow and
14 teal/green mixing tips shown in U.S. Trademark Registration Nos. 3,762,232 and Reg.
15 No. 3,762,233.

16 31. Defendants' conduct is likely to cause confusion, to cause mistake, and to
17 deceive.

18 32. Mixpac has no adequate remedy at law. Defendants' conduct has caused
19 and, if not enjoined, will continue to cause irreparable damage to Mixpac. As a result
20 of Defendants' wrongful conduct, Mixpac is entitled to injunctive relief, Defendants'
21 profits, statutory damages, damages, and attorney's fees and costs.

22 **SECOND CLAIM**

23 **Infringement of the Colored Dome Mark**

24 **and Mixpac Trade Dress Under 15 U.S.C. §1125(a)**

25 33. Mixpac realleges and incorporates herein by reference the allegations in
26 paragraphs 1 through 32 of its complaint.

27 34. Defendants adopted its trade dress for its mixing tips with knowledge of
28 the Colored Dome Mark and Mixpac Trade Dress.

1 misrepresent the nature, characteristics, or qualities of another person's goods, services
2 or commercial activities in violation of 15 U.S.C. § 1125(a).

3 42. Defendants have violated and intend to continue to willfully, knowingly,
4 and intentionally violate 15 U.S.C. § 1125(a)(1)(B) by their unlawful acts in a manner
5 that is likely to cause confusion, mistake, or to deceive as to the nature, characteristics,
6 or qualities of their goods, services, or commercial activities.

7 43. Defendants' conduct has caused Mixpac to suffer irreparable harm and,
8 unless enjoined by the court, will cause Mixpac to continue to suffer damage to its
9 operation, reputation, and goodwill and will suffer the loss of sales and profits that
10 Mixpac would have made but for Defendants' acts. Defendants have been, and will
11 continue to be, unjustly enriched by their unlawful acts.

12 44. Mixpac has no adequate remedy at law. Defendants' conduct has caused
13 and, if not enjoined, will continue to cause irreparable damage to Mixpac. As a result
14 of Defendants' wrongful conduct, Mixpac is entitled to injunctive relief, Defendants'
15 profits, damages, and attorney's fees and costs.

16 **FOURTH CLAIM**

17 **False Designation of Origin as to**

18 **Defendants' Mixing Tips Under 15 U.S.C. § 1125(a)**

19 45. Mixpac realleges and incorporates herein by reference the allegations in
20 paragraphs 1 through 44 of its complaint.

21 46. Defendants' mixing tips utilize the Colored Dome Mark or Mixpac Trade
22 Dress in such a way as to unfairly compete in the marketplace by drawing a false
23 association between Defendants' products and Mixpac.

24 47. Defendants have made false designations of origin and false or misleading
25 descriptions or representations of fact in commercial advertising or promotion which
26 misrepresent the nature, characteristics, qualities, sponsorship, or association with
27 another person's goods, services, or commercial activities in violation of 15 U.S.C. §
28 1125(a).

1 of Defendants' wrongful conduct, Mixpac is entitled to injunctive relief, Defendants'
2 profits, damages, and attorney's fees and costs.

3 **SEVENTH CLAIM**

4 **Patent Infringement**

5 **(U.S. PATENT NO. 5,918,772)**

6 63. Plaintiff realleges and incorporates herein by reference the allegations in
7 paragraphs 1 through 62 of its complaint.

8 64. By using, importing, selling, or offering to sell their mixing tips,
9 Defendants have infringed one or more claims of the '772 Patent directly,
10 contributorily, or through inducement. Defendants have engaged in the foregoing
11 conduct with respect to the patented invention in the United States without authority
12 from Mixpac during the term of the '772 Patent.

13 65. Upon information and belief, Defendants will not stop using, selling,
14 and/or offering for sale the products at issue to avoid infringing the '772 Patent.

15 66. Upon information and belief, Defendants' infringement has been
16 deliberate, willful, and wanton, and with full knowledge of the '772 Patent.

17 67. Defendants' conduct has caused Plaintiffs to suffer and, unless enjoined
18 by the court, will cause Plaintiffs to continue to suffer damage to their operation,
19 reputation, and goodwill.

20 68. Mixpac has no adequate remedy at law. Defendants' conduct has caused
21 and, if not enjoined, will continue to cause irreparable damage to Mixpac. As a result
22 of Defendants' wrongful conduct, Mixpac is entitled to a temporary restraining order,
23 injunctive relief, and damages.

24 **EIGHTH CLAIM**

25 **Patent Infringement**

26 **(U.S. PATENT NO. 6, 186,363)**

27 69. Mixpac realleges and incorporates by reference the allegations in
28 paragraphs 1 through 68 of its complaint.

1 attorneys, employees, and all others in privity with it from using
2 any trade dress which is likely to be confused with the Colored
3 Dome Mark or Mixpac Trade Dress;

4 D. Order Defendants to identify and recall from customers and destroy
5 all infringing materials, including but not limited to all packaging
6 and advertising incorporating the infringing trade dress or any other
7 trade dress confusingly similar to the Colored Dome Mark or
8 Mixpac Trade Dress;

9 E. Award Mixpac damages for trade-dress infringement including
10 prejudgment interest and costs against Defendants under 15 U.S.C.
11 § 1117;

12 F. Award Mixpac three times its damages to compensate Mixpac
13 under 15 U.S.C. § 1117;

14 G. Award Mixpac its reasonable attorney's fees under 15 U.S.C.
15 § 1117;

16 H. Award Mixpac statutory damages for trademark counterfeiting
17 pursuant to 35 U.S.C. § 1117;

18 I. Order, adjudge, and decree that Defendants have infringed the '772
19 and '363 Patents;

20 J. Order, adjudge, and decree that Defendants willfully and
21 knowingly infringed the '772 and '363 Patents;

22 K. Order, adjudge, and decree that Defendants' infringement of the
23 '772 and '363 patents is exceptional under 35 U.S.C. § 285;

24 L. Issue temporary, preliminary, and permanent injunctive relief
25 prohibiting Defendants and their respective parents, subsidiaries,
26 principals, officers, agents, affiliates, servants, attorneys,
27 employees, and all others in privity with them from infringing the
28 '772 and '363 Patents;

- 1 M. Award Mixpac damages for patent infringement including
2 prejudgment interest and costs against Defendants under 35 U.S.C.
3 § 284;
4 N. Award Mixpac three times its damages to compensate Plaintiff
5 under 35 U.S.C. § 284;
6 O. Award Mixpac its reasonable attorney's fees under 35 U.S.C. §
7 285; and
8 P. Award such other and further relief as the court may deem just.
9

10 K&L GATES LLP

11
12 Dated: February 23, 2011

By: 

13 Christopher J. Kondon
14 Christina N. Goodrich
15 Michael T. Murphy
(*Pro Hac Vice* pending)

16 Attorneys for Plaintiffs, SULZER
17 MIXPAC USA, INC. and SULZER
18 MIXPAC AG
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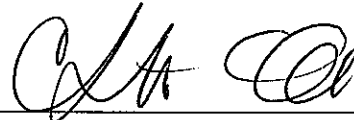
DEMAND FOR JURY TRIAL

Plaintiffs SULZER MIXPAC USA, INC. and SULZER MIXPAC AG hereby
demand trial by jury in this action.

K&L GATES LLP

Dated: February 22, 2011

By:



Christopher J. Kondon
Christina N. Goodrich
Michael T. Murphy
(*Pro Hac Vice* pending)

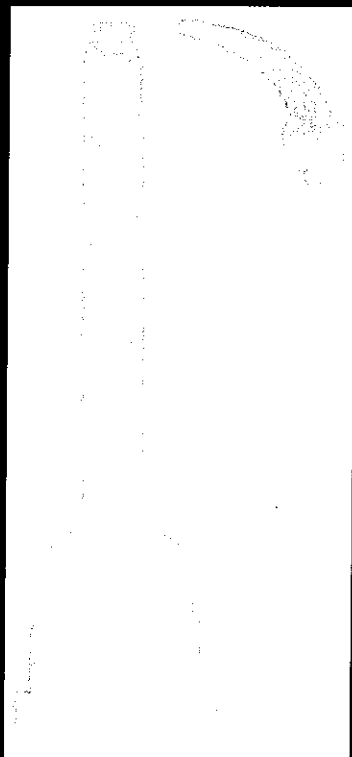
Attorneys for Plaintiffs, SULZER
MIXPAC USA, INC. and SULZER
MIXPAC AG

EXHIBIT A

- Home
- Air Compressor
- Articulator
- Articulate accessories
- Blasters & Steamers
- Bur
- Casting
- Discs
- Dust Collector
- Denture
- Die Material
- Die Stone
- Dipping & Wax Pot
- Handpiece
- Impression
- Investment
- Instrument
- Lab Rx Forms

- Lathe & Accessories
- Lope & Lamp
- Metal & Trap
- Mixers
- Mounted Stone
- Ovens
- Polishers
- Porcelain Access.
- TCS
- Trimmers
- Vibrator
- Waxes
- Contact Us

- HP Mixing Tips & Intra-Oral Tips
MIXING TIPS (48 per. pk.) \$16.95
ORAL TIPS (48 per. PK.) \$16.95



. GI-MASK AUTOMIX NEW FORMULA (COLTENE
WHALEDENT)

AUTO MIX N.F. STARTER KIT \$82

UNIVERSAL SEPARATOR 50 ML. \$29.50

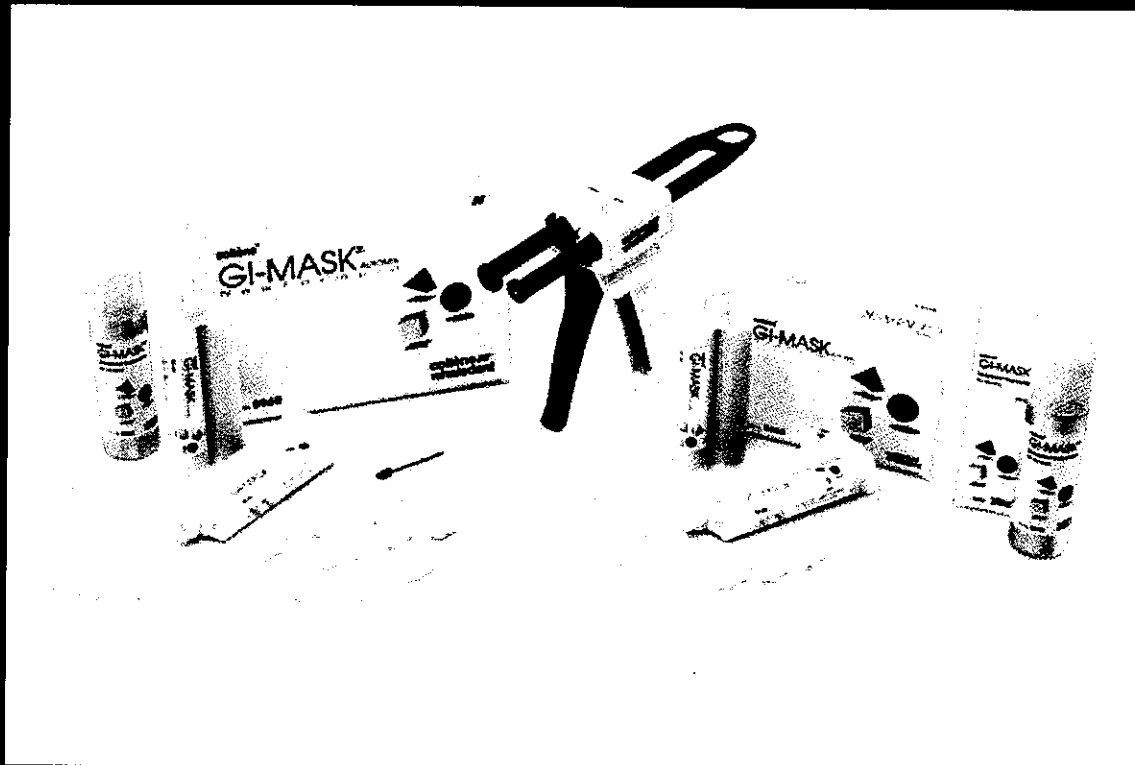
REFILL PACK \$87

AUTO MIX REFILL \$72

LAB PUTTY \$55

LAB PUTTY CAT PASTE \$19.50

Precise reproduction of the gingival soft tissue, interdental spaces and papilles. Gi-Mask Automix New Formula facilitates the preparations of esthetically excellent and perfectly functioning crown and bridge work. In addition it helps to prepare ideal conditions for periodontal hygiene.



- Softtissue Moulage (Kerr Lab)
INTRO KIT \$140.95
REFILL \$41.95
SEPARATOR \$22

Kerr's Softtissue Moulage is that natural selection for replication of the soft gingival tissue on a stone cast in the laboratory. It is ideal for use in fabrication of implants to determine emergence profiles, to check the fit of abutments on the implants and for all gingival simulation. Kit includes 3 50ml cartridges, 24 universal mixing tips, 1 bottle separating medium, 24 intraoral tips, 1 extruder gun.



Dent-Mart Int'l dba L&C Dental Supply
720 N. Valley St. Ste# D
Anaheim, CA 92801
United States

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Web Hosting by Yahoo!

ph: 714-956-1111
fax: 714-956-5324
dentmartle@yahoo.com

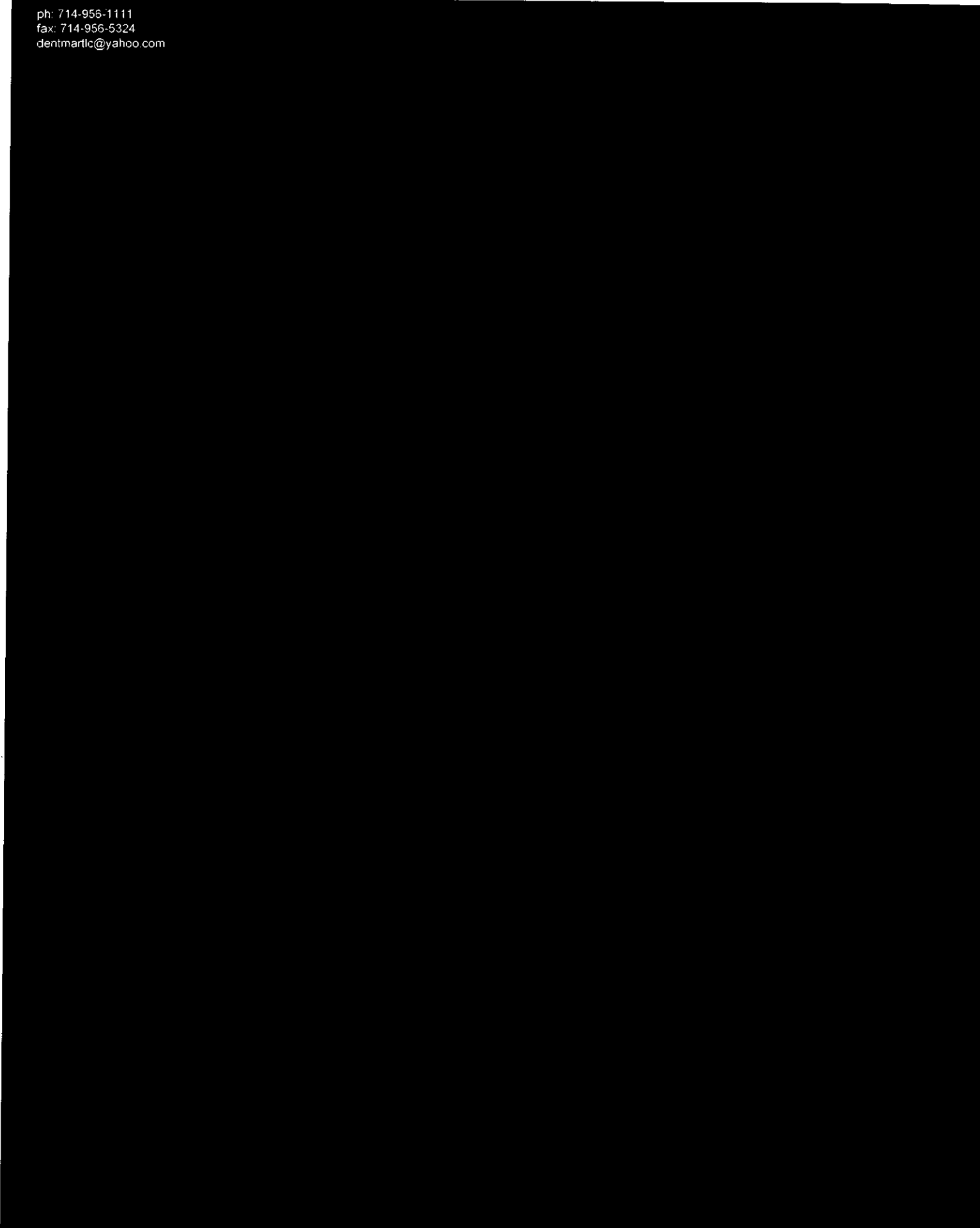


EXHIBIT B

EXHIBIT B – MIXPAC'S DISTINCTIVE COLORED DOME MARK

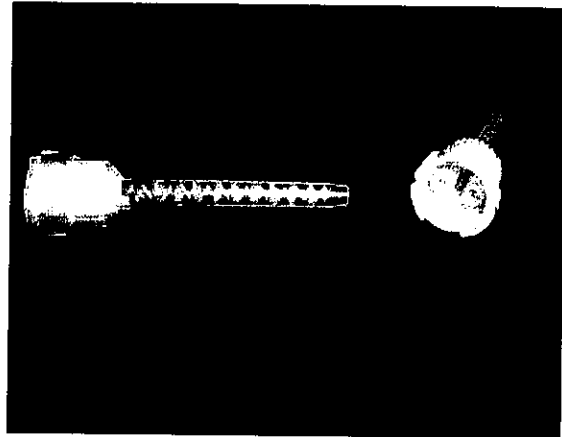
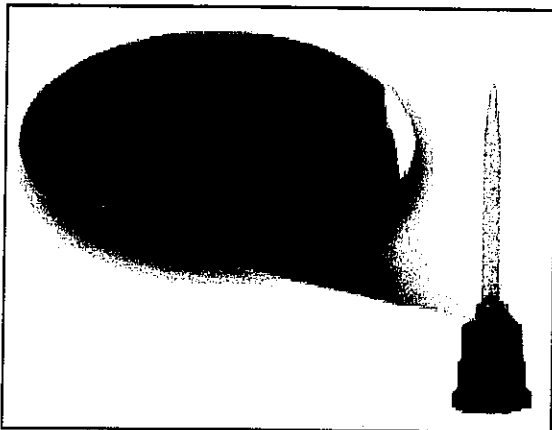
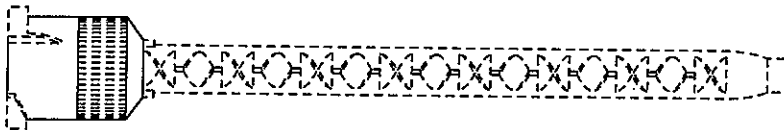
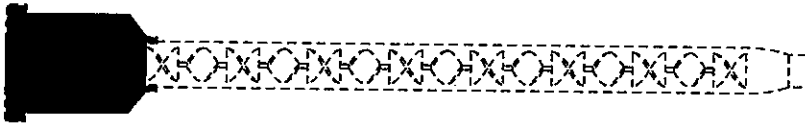
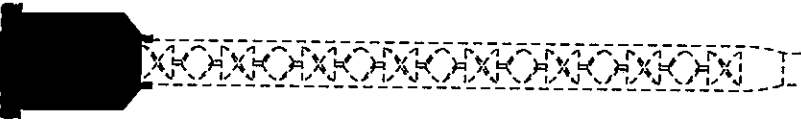
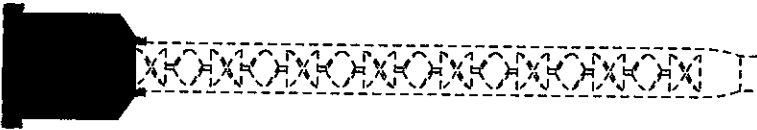
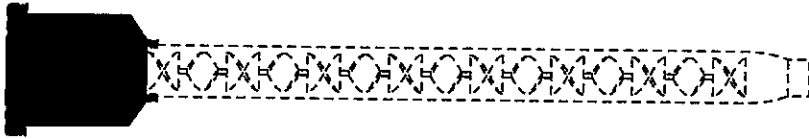
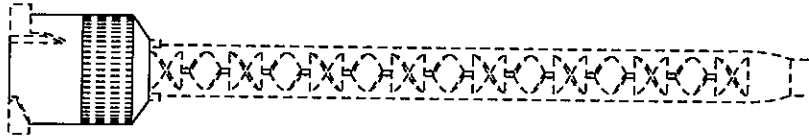
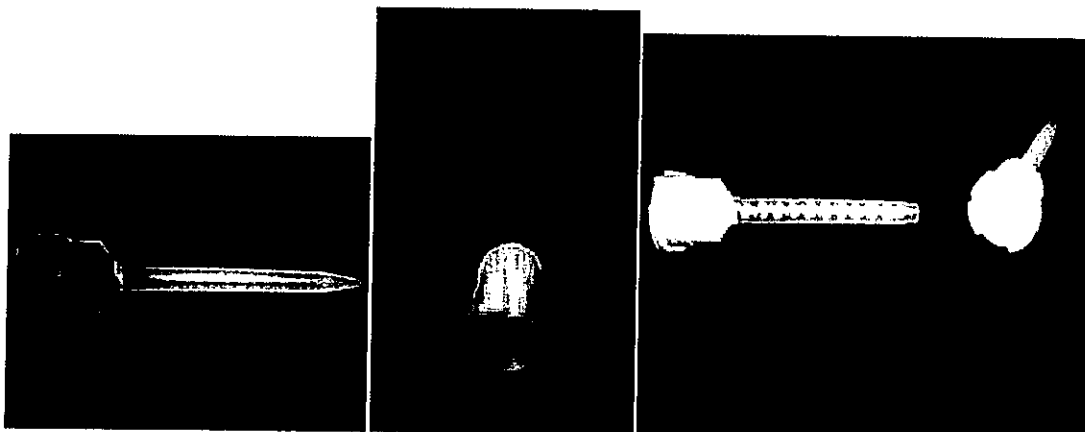
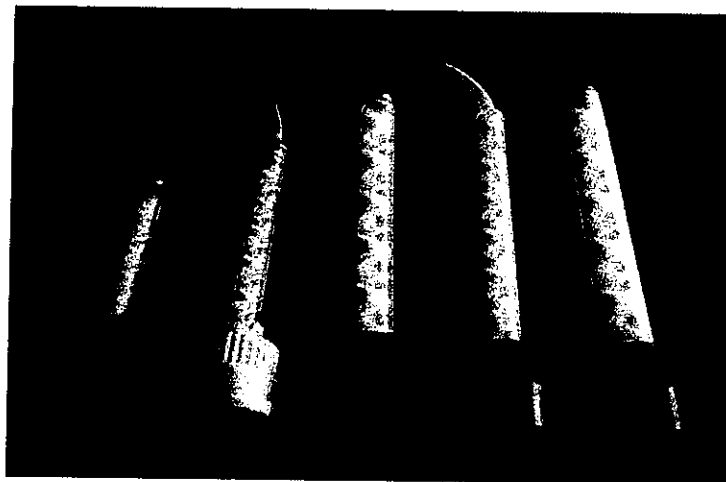


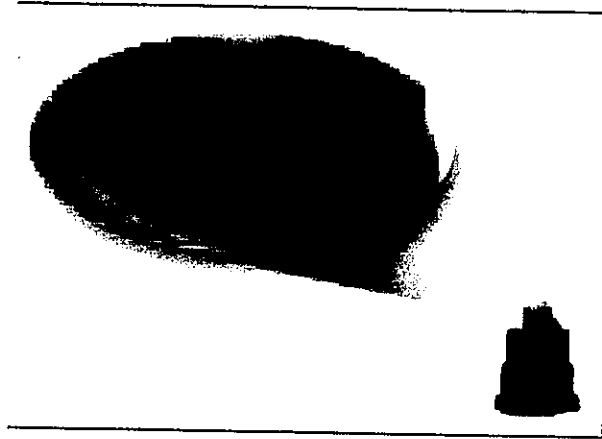
EXHIBIT C

**EXHIBIT C – DIGITAL PICTURE OF MIXPAC TRADE DRESS AND
COLORED DOME MARK**

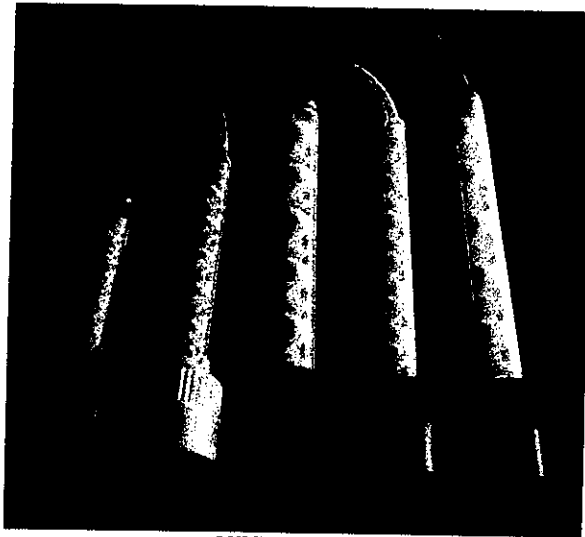
1. Genuine Mixpac Tips

Mixpac sells a line of mixing tips with a dome shape in the colors yellow, teal, blue, pink, purple or white:





2. Comparison Between Genuine Mixpac and Starryshine Tips



MIXPAC



STARRYSHINE

EXHIBIT D

United States of America

United States Patent and Trademark Office



Reg. No. 3,762,232 SULZER MIXPAC AG (SWITZERLAND CORPORATION)
Registered Mar. 23, 2010 GRUNDSTRASSE 12
ROTKREUZ, SWITZERLAND CH-6343

Int. Cls.: 7, 8 and 10 FOR: MIXING TIPS USED WITH DISPENSERS OF TWO PART COMPOSITIONS FOR USE
IN CONNECTION WITH POWER-OPERATED AND MACHINE-OPERATED DISPENSING
GUNS USED FOR MIXING ADHESIVES AND SEALANTS FOR USE IN THE CONSTRUCTION,
AUTOMOTIVE, ELECTRONICS, AEROSPACE, AND INDUSTRIAL ASSEMBLY AND
REPAIR INDUSTRIES, IN CLASS 7 (U.S. CLS. 13, 19, 21, 23, 31, 34 AND 35).

**TRADEMARK
PRINCIPAL REGISTER**

FIRST USE 12-31-1997; IN COMMERCE 12-31-1997.

FOR: MIXING TIPS USED WITH DISPENSERS OF TWO PART COMPOSITIONS FOR USE
IN CONNECTION WITH MANUALLY-OPERATED DISPENSING GUNS USED FOR MIXING
ADHESIVES AND SEALANTS FOR USE IN THE CONSTRUCTION, AUTOMOTIVE,
ELECTRONICS, AEROSPACE, AND INDUSTRIAL ASSEMBLY AND REPAIR INDUSTRIES,
IN CLASS 8 (U.S. CLS. 23, 28 AND 44).

FIRST USE 12-31-1997; IN COMMERCE 12-31-1997.

FOR: MIXING TIPS USED WITH DISPENSERS OF TWO PART COMPOSITIONS FOR
DENTAL APPLICATIONS, IN CLASS 10 (U.S. CLS. 26, 39 AND 44).

FIRST USE 12-31-1997; IN COMMERCE 12-31-1997.



THE MARK CONSISTS OF THE COLOR YELLOW AND THE CONFIGURATION OF A FUTURISTIC, DOME-FAÇADE TIP HAVING A SMOOTH BOTTOM PORTION, A SLIGHTLY INDENTED MIDDLE PORTION, AN UPPER PORTION ANGLED INWARDLY WHICH NARROWS AND RESTRICTS TO A TOP PORTION THAT ATTACHES TO A TRANSPARENT STEM WHICH ENCASES A CORKSCREW LIKE ELEMENT. THE DOTTED OUTLINE OF THE BOTTOM TAB AND TOP TABS ON THE DOME-FAÇADE TIP, THE SLIGHTLY INDENTED MIDDLE PORTION CONSISTING OF UNIFORM CONTINUOUS RIDGES, THE STEM AND THE CORKSCREW LIKE ELEMENT IS INTENDED TO SHOW POSITION OF THE MARK ON THE GOODS AND IS NOT PART OF THE MARK.

THE COLOR(S) YELLOW IS/ARE CLAIMED AS A FEATURE OF THE MARK.

David J. Kypas

Director of the United States Patent and Trademark Office

Reg. No. 3,762,232 SEC. 2(F).

SER. NO. 77-623,873, FILED 12-1-2008.

NORA BUCHANAN WILL, EXAMINING ATTORNEY

United States of America

United States Patent and Trademark Office



Reg. No. 3,762,233 SULZER MIXPAC AG (SWITZERLAND CORPORATION)
Registered Mar. 23, 2010 GRUNDSTRASSE 12
ROTKREUZ, SWITZERLAND CH-6343

Int. Cls.: 7, 8 and 10 FOR: MIXING TIPS USED WITH DISPENSERS OF TWO PART COMPOSITIONS FOR USE IN CONNECTION WITH POWER-OPERATED AND MACHINE-OPERATED DISPENSING GUNS USED FOR MIXING ADHESIVES AND SEALANTS FOR USE IN THE CONSTRUCTION, AUTOMOTIVE, ELECTRONICS, AEROSPACE, AND INDUSTRIAL ASSEMBLY AND REPAIR INDUSTRIES, IN CLASS 7 (U.S. CLS. 13, 19, 21, 23, 31, 34 AND 35).

TRADEMARK
PRINCIPAL REGISTER

FIRST USE 12-31-1997; IN COMMERCE 12-31-1997.

FOR: MIXING TIPS USED WITH DISPENSERS OF TWO PART COMPOSITIONS FOR USE IN CONNECTION WITH MANUALLY-OPERATED DISPENSING GUNS USED FOR MIXING ADHESIVES AND SEALANTS FOR USE IN THE CONSTRUCTION, AUTOMOTIVE, ELECTRONICS, AEROSPACE, AND INDUSTRIAL ASSEMBLY AND REPAIR INDUSTRIES, IN CLASS 8 (U.S. CLS. 23, 28 AND 44).

FIRST USE 12-31-1997; IN COMMERCE 12-31-1997.

FOR: MIXING TIPS USED WITH DISPENSERS OF TWO PART COMPOSITIONS FOR DENTAL APPLICATIONS, IN CLASS 10 (U.S. CLS. 26, 39 AND 44).

FIRST USE 12-31-1997; IN COMMERCE 12-31-1997.



THE MARK CONSISTS OF THE COLOR TEAL AND THE CONFIGURATION OF A FUTURISTIC, DOME-FAÇADE TIP HAVING A SMOOTH BOTTOM PORTION, A SLIGHTLY INDENTED MIDDLE PORTION, AN UPPER PORTION ANGLED INWARDLY WHICH NARROWS AND RESTRICTS TO A TOP PORTION THAT ATTACHES TO A TRANSPARENT STEM WHICH ENCASES A CORKSCREW LIKE ELEMENT. THE DOTTED OUTLINE OF THE BOTTOM TAB AND TOP TABS ON THE DOME-FAÇADE TIP, THE SLIGHTLY INDENTED MIDDLE PORTION CONSISTING OF UNIFORM CONTINUOUS RIDGES, THE STEM AND THE CORKSCREW LIKE ELEMENT IS INTENDED TO SHOW POSITION OF THE MARK ON THE GOODS AND IS NOT PART OF THE MARK.

THE COLOR(S) TEAL IS/ARE CLAIMED AS A FEATURE OF THE MARK.

David J. Kappas

Director of the United States Patent and Trademark Office

Reg. No. 3,762,233 SEC. 2(F).

SER. NO. 77-623,884, FILED 12-1-2008.

NORA BUCHANAN WILL, EXAMINING ATTORNEY

EXHIBIT E



US005918772A

United States Patent ^[19]

Keller et al.

[11] Patent Number: **5,918,772**[45] Date of Patent: ***Jul. 6, 1999**

[54] **BAYONET FASTENING DEVICE FOR THE ATTACHMENT OF AN ACCESSORY TO A MULTIPLE COMPONENT CARTRIDGE OR DISPENSING DEVICE**

[75] Inventors: **Wilhelm A. Keller**, Obstgartenweg 9, CH-6402 Merlischachen, Switzerland;
Richard J. Wilson, Andover, Mass.

[73] Assignee: **Wilhelm A. Keller**, Merlischachen, Switzerland

[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] Appl. No.: **08/563,109**

[22] Filed: **Nov. 27, 1995**

Related U.S. Application Data

[63] Continuation-in-part of application No. 08/403,172, Mar. 13, 1995, abandoned; and a continuation-in-part of application No. 08/522,109, Aug. 31, 1995, abandoned.

Foreign Application Priority Data

Aug. 24, 1995 [EP] European Pat. Off. 95810531

[51] Int. Cl.⁶ **B67D 5/56**

[52] U.S. Cl. **222/145.6; 222/145.5; 222/567; 285/915**

[58] Field of Search **222/145.5, 145.6, 222/567, 326, 327, 136, 137; 285/360, 361, 376, 401, 396, 400, 402, 915**

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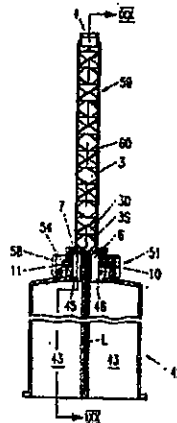
2232910 1/1991 United Kingdom .

Primary Examiner—Kenneth Bomberg
Attorney, Agent, or Firm—Foley & Lardner

[57] ABSTRACT

The bayonet attachment on the cartridge for attaching a mixer or accessory to a multiple component cartridge is formed as a ring-shaped bayonet socket with two internal recesses and two diametrically opposed cutouts forming one bayonet coupling part means, whereas the bayonet attachment of the mixer or accessory comprises two bayonet lugs corresponding to the cutouts. In a preferred embodiment the lugs and cutouts are of different widths for the coded alignment of the mixer or accessory to the cartridge in one predetermined position only.

44 Claims, 29 Drawing Sheets



5,918,772

Page 2

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U.S. Patent

Jul. 6, 1999

Sheet 1 of 29

5,918,772

FIG. 1

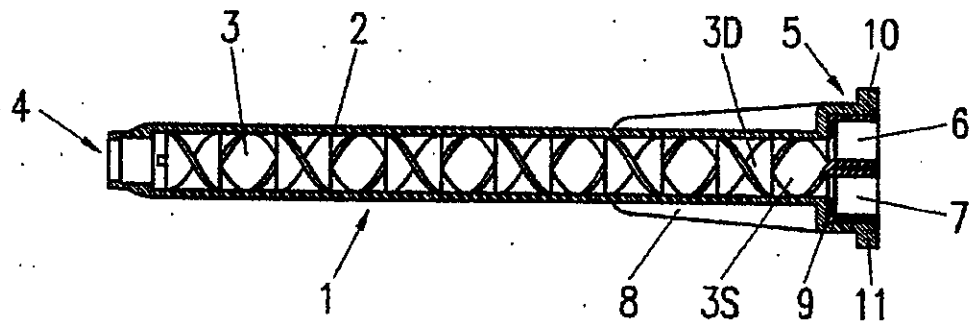
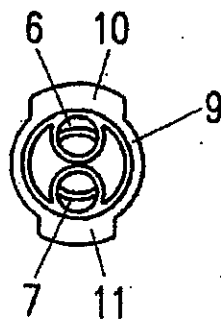


FIG. 2



U.S. Patent

Jul. 6, 1999

Sheet 2 of 29

5,918,772

FIG. 3

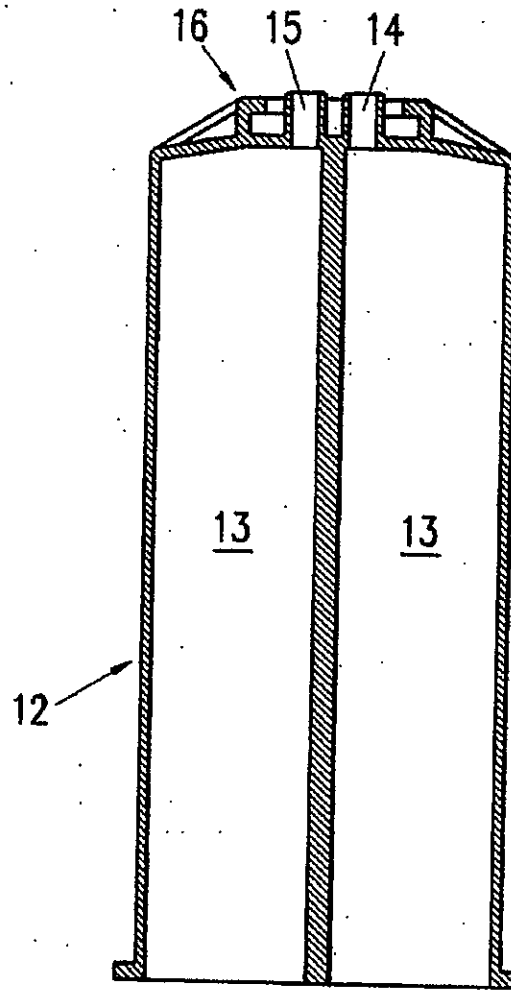
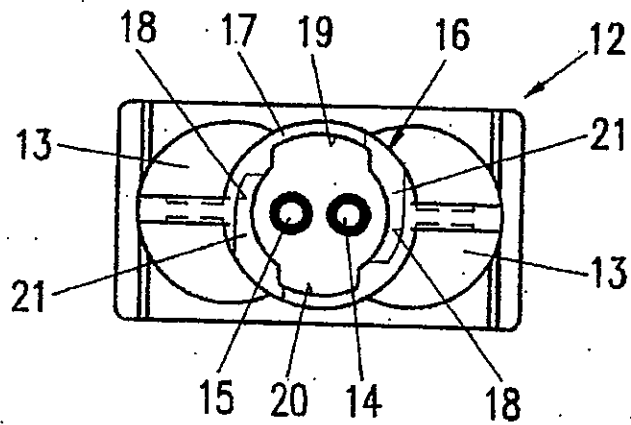


FIG. 4



U.S. Patent

Jul. 6, 1999

Sheet 3 of 29

5,918,772

FIG. 5

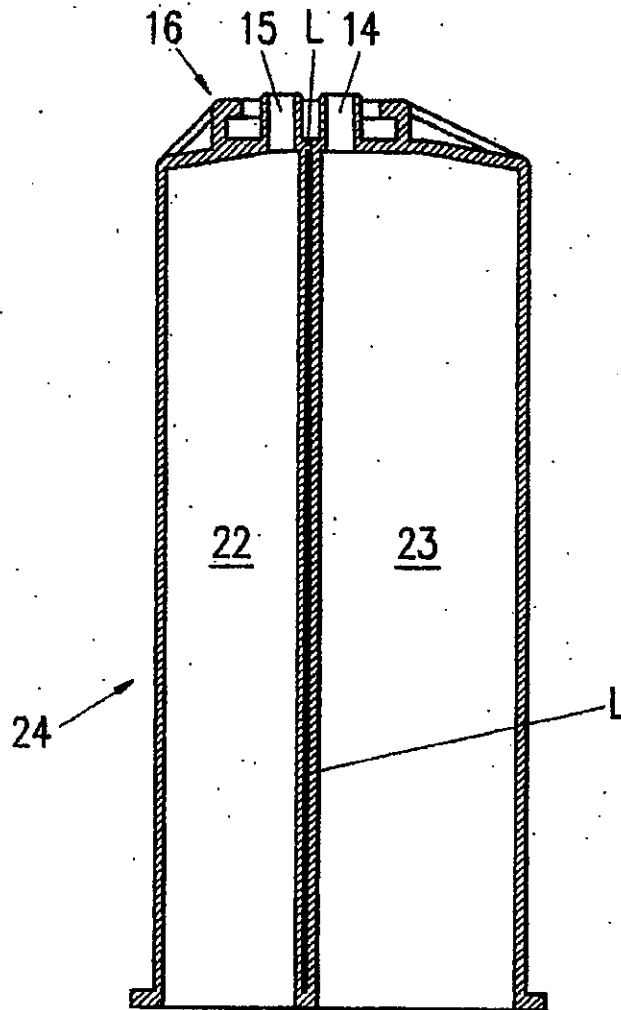
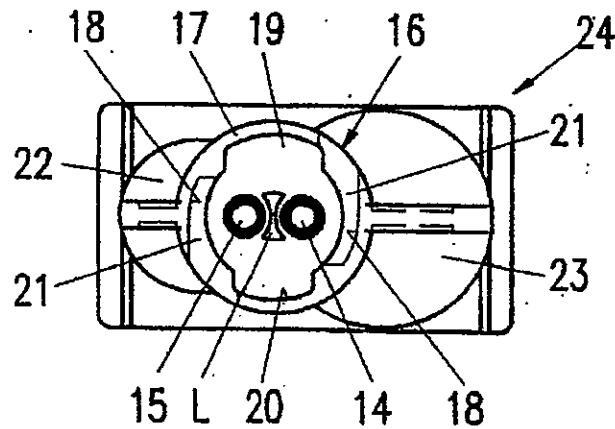


FIG. 6



U.S. Patent

Jul. 6, 1999

Sheet 4 of 29

5,918,772

FIG. 7

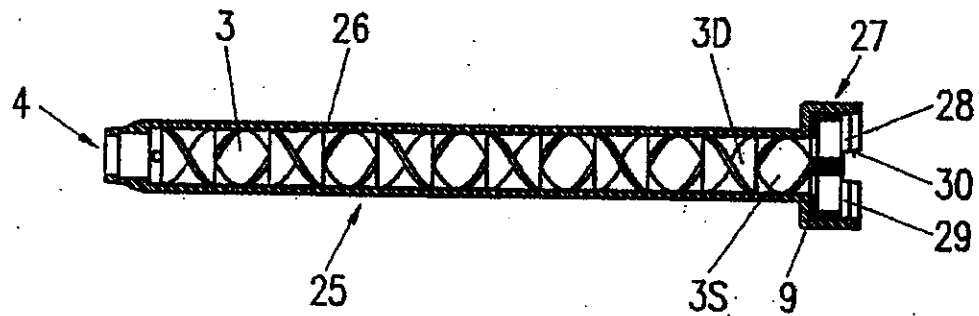
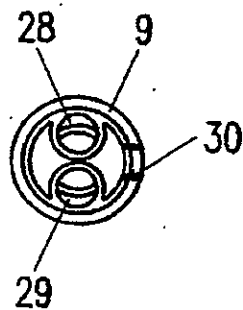


FIG. 8



U.S. Patent

Jul. 6, 1999

Sheet 5 of 29

5,918,772

FIG. 9

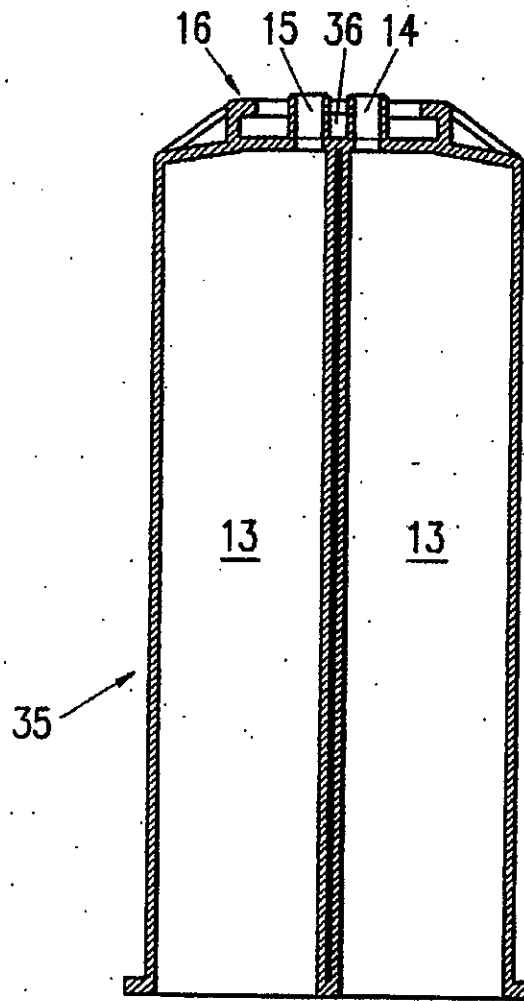
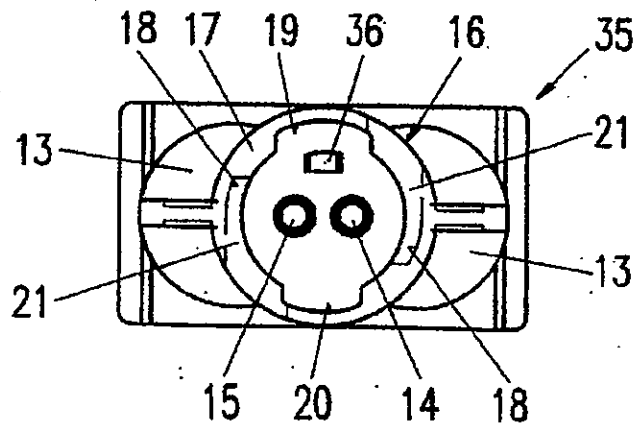


FIG. 10



U.S. Patent

Jul. 6, 1999

Sheet 6 of 29

5,918,772

FIG. 11

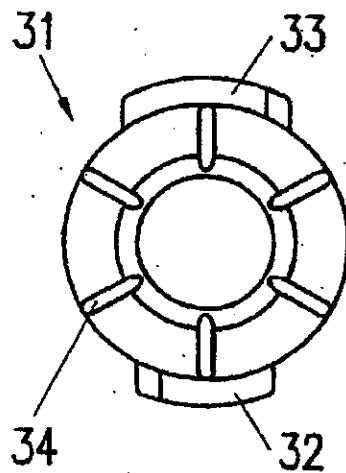
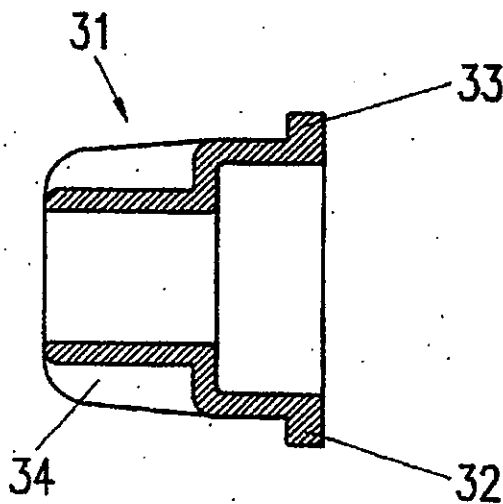


FIG. 12



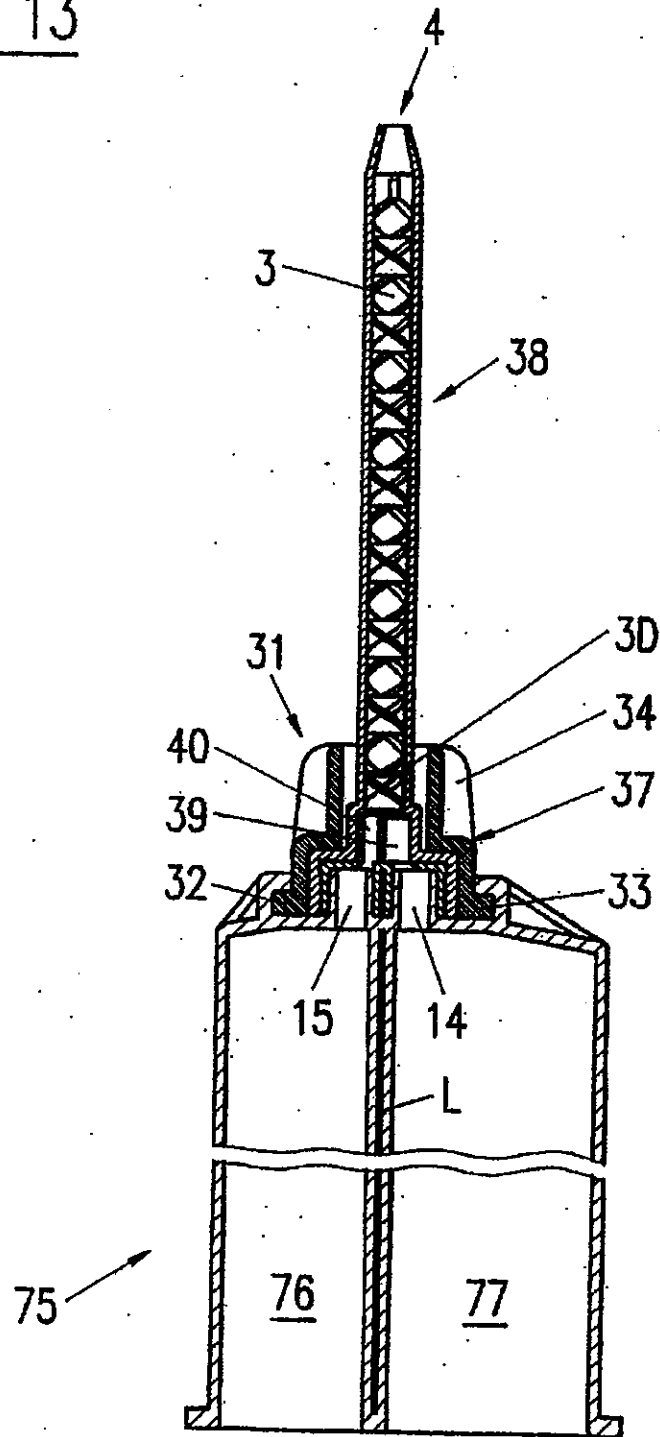
U.S. Patent

Jul. 6, 1999

Sheet 7 of 29

5,918,772

FIG. 13



U.S. Patent

Jul. 6, 1999

Sheet 8 of 29

5,918,772

FIG. 14

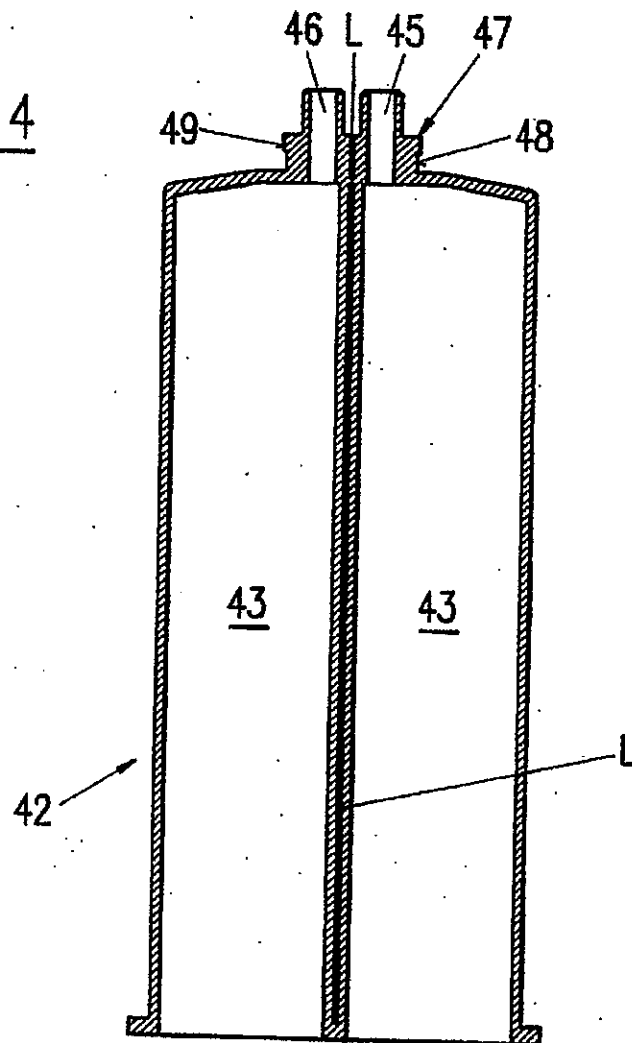
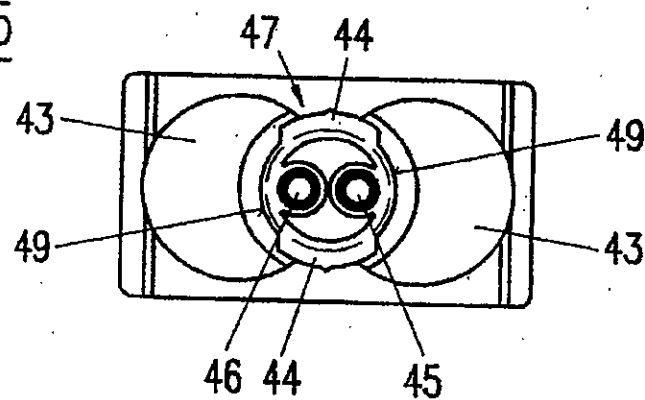


FIG. 15



U.S. Patent

Jul. 6, 1999

Sheet 9 of 29

5,918,772

FIG. 16A

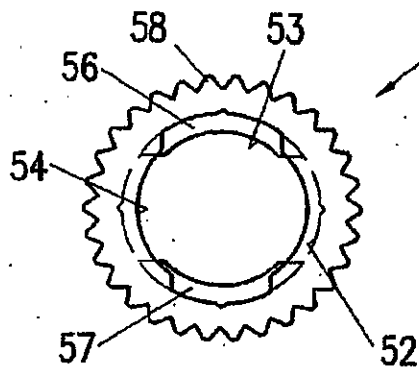


FIG. 16B

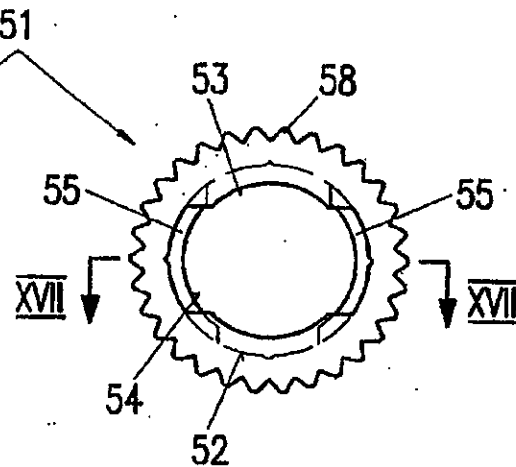
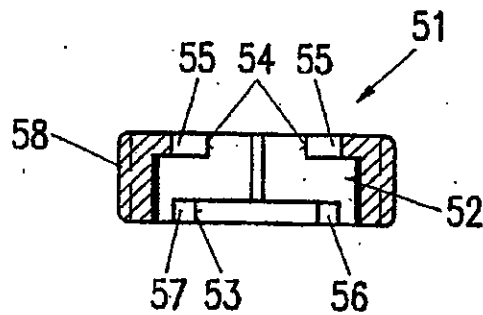


FIG. 17



U.S. Patent

Jul. 6, 1999

Sheet 10 of 29

5,918,772

FIG. 18

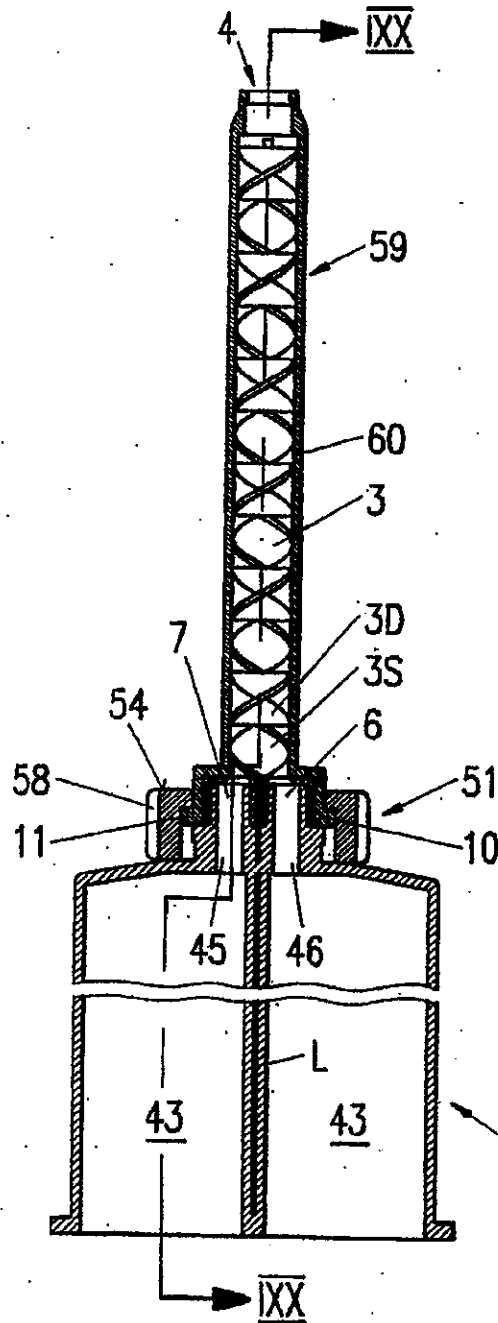
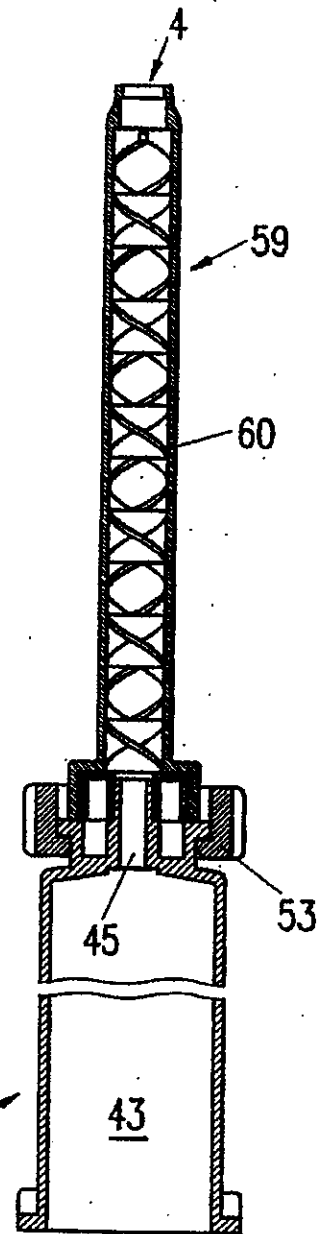


FIG. 19



U.S. Patent

Jul. 6, 1999

Sheet 11 of 29

5,918,772

FIG. 20

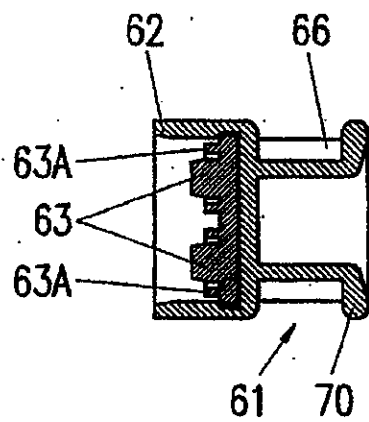


FIG. 21

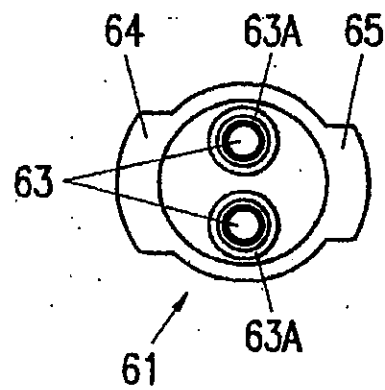


FIG. 22

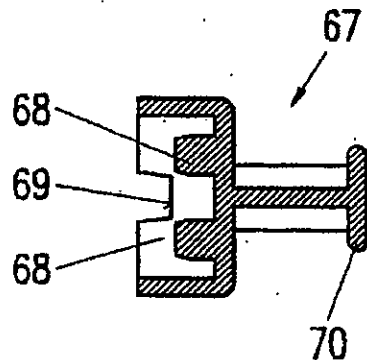
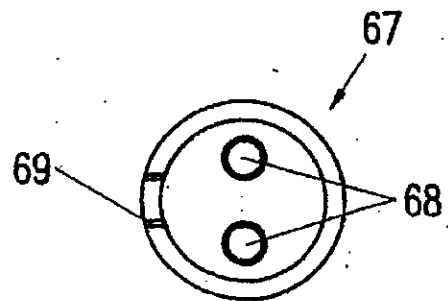


FIG. 23



U.S. Patent

Jul. 6, 1999

Sheet 12 of 29

5,918,772

FIG. 24

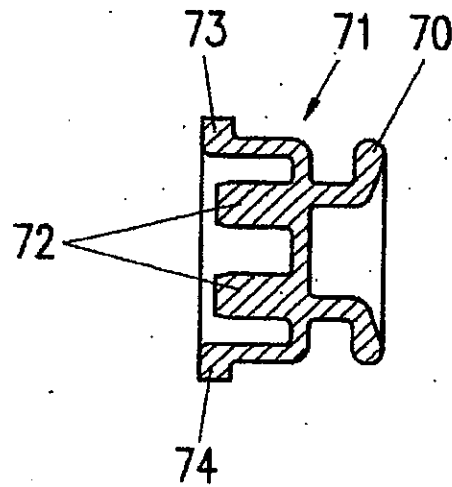
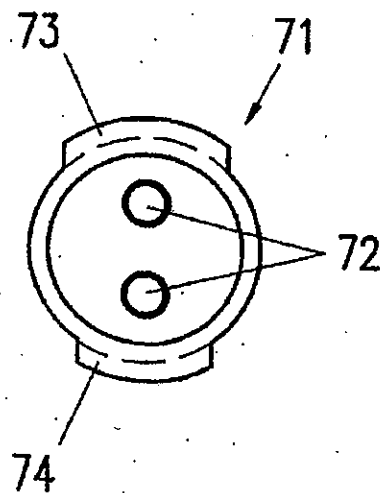


FIG. 25



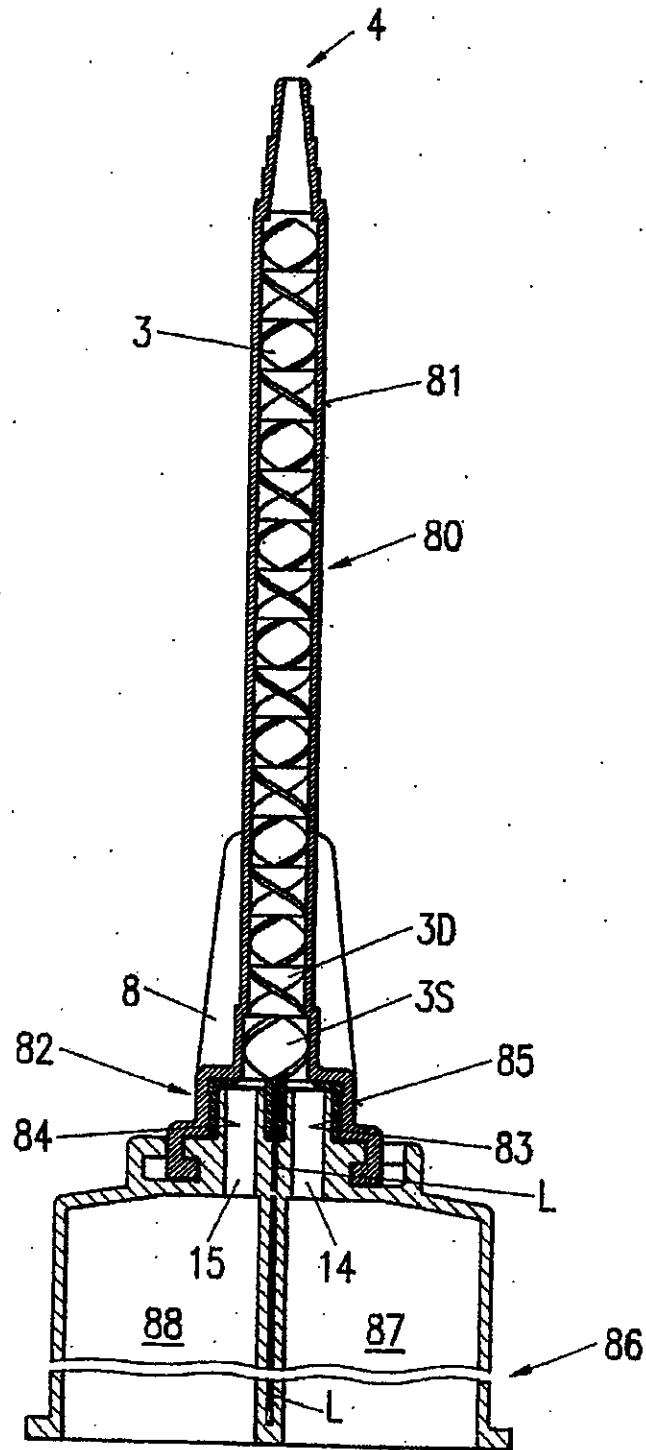
U.S. Patent

Jul. 6, 1999

Sheet 13 of 29

5,918,772

FIG. 26



U.S. Patent

Jul. 6, 1999

Sheet 14 of 29

5,918,772

FIG. 27

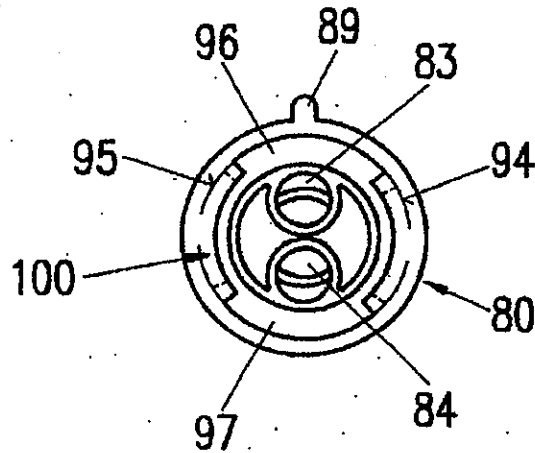
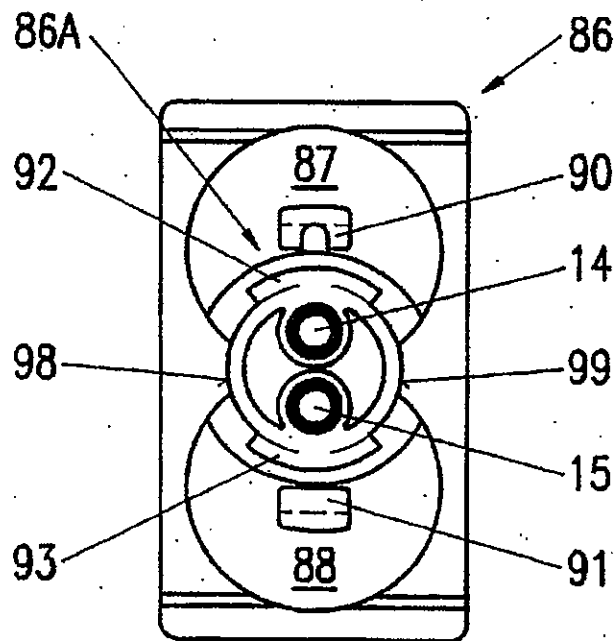


FIG. 28



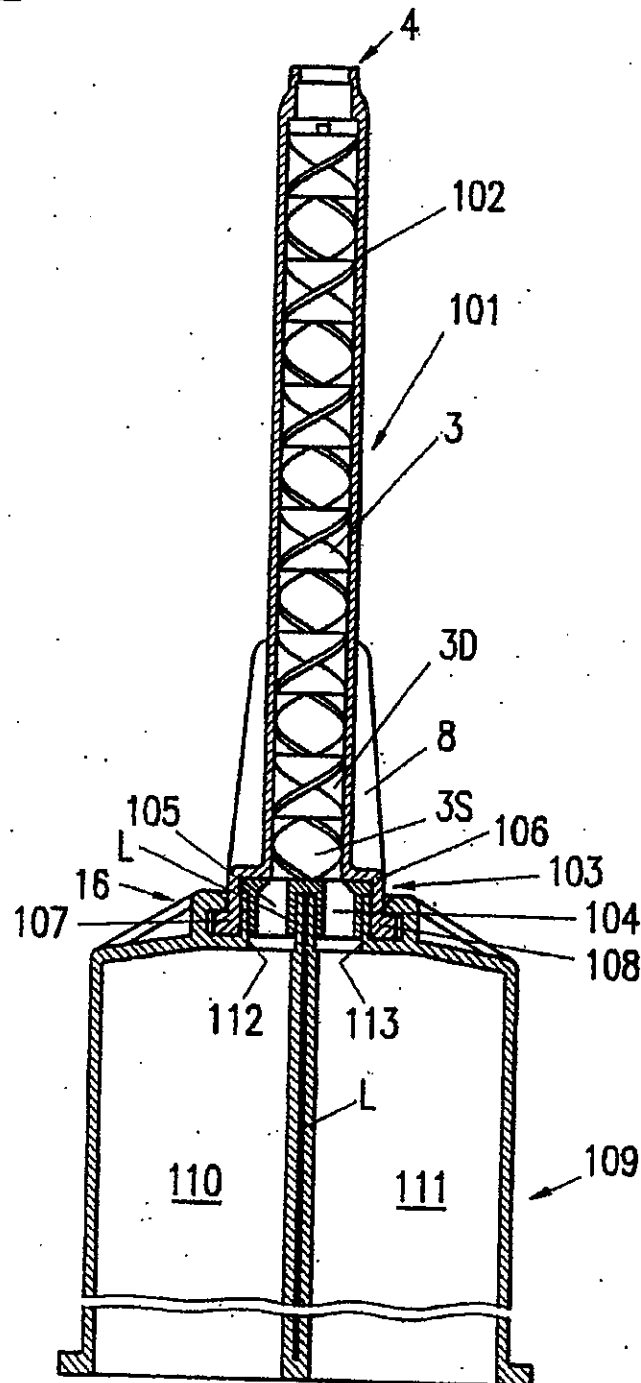
U.S. Patent

Jul. 6, 1999

Sheet 15 of 29

5,918,772

FIG. 29



U.S. Patent

Jul. 6, 1999

Sheet 16 of 29

5,918,772

FIG. 30

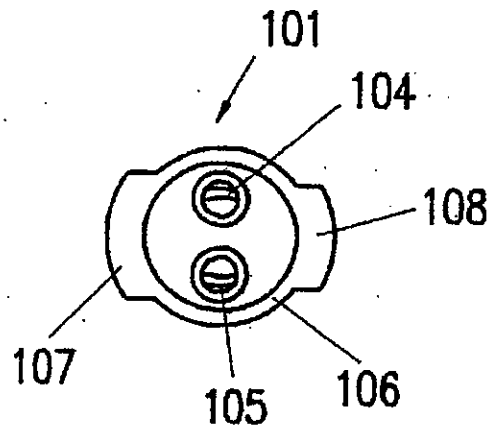
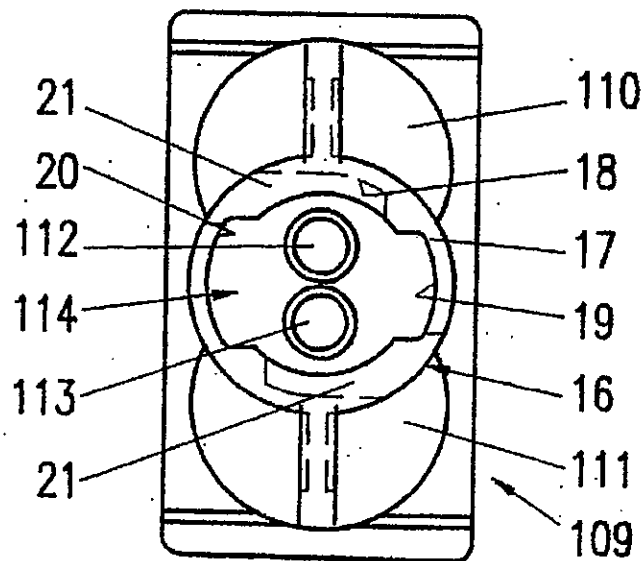


FIG. 31



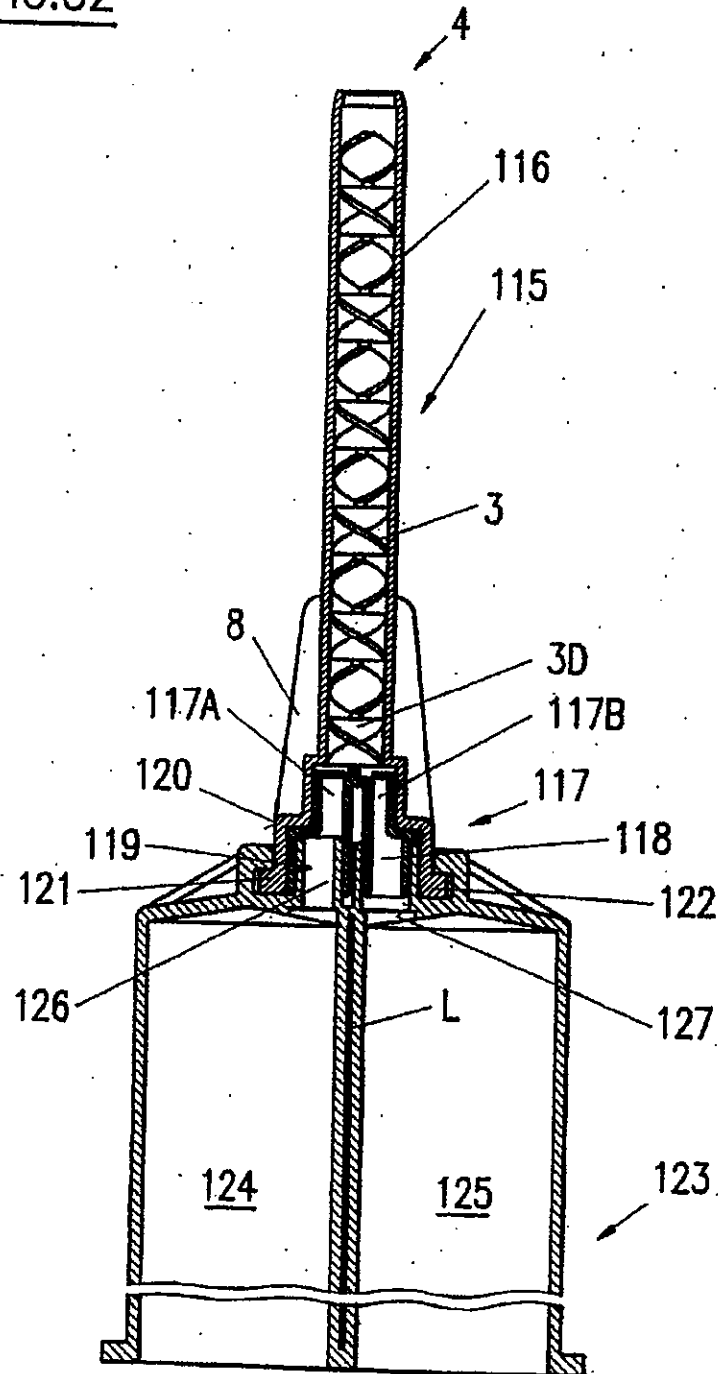
U.S. Patent

Jul. 6, 1999

Sheet 17 of 29

5,918,772

FIG. 32



U.S. Patent

Jul. 6, 1999

Sheet 18 of 29

5,918,772

FIG. 33

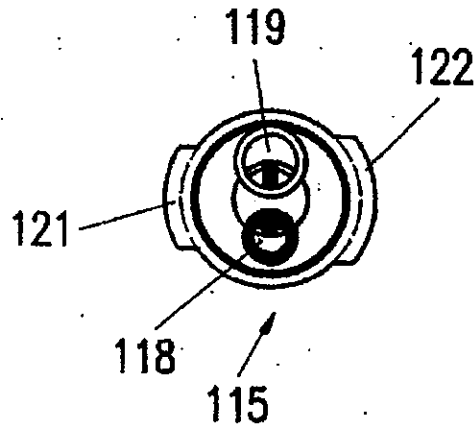


FIG. 34

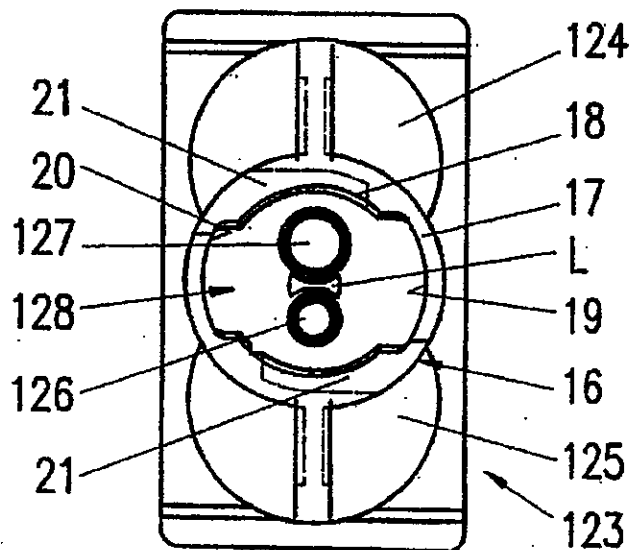


EXHIBIT G

U.S. Patent

Jul. 6, 1999

Sheet 20 of 29

5,918,772

FIG. 36

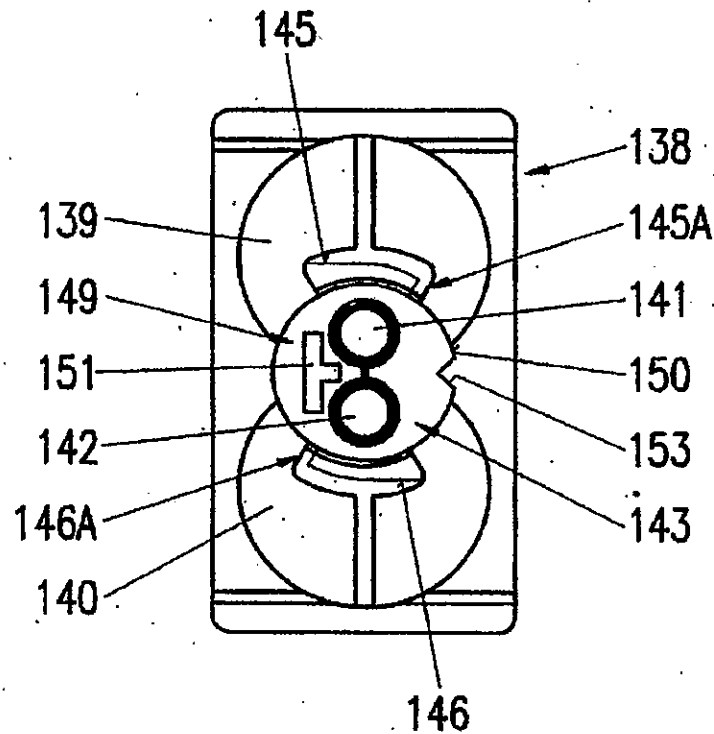
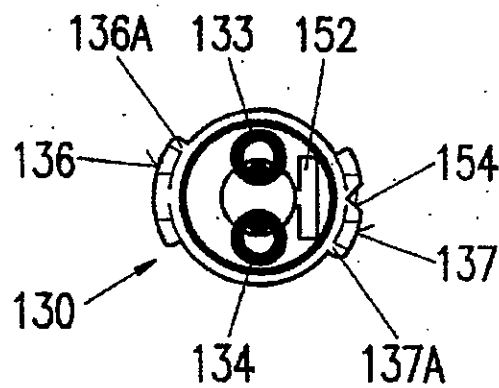


FIG. 37



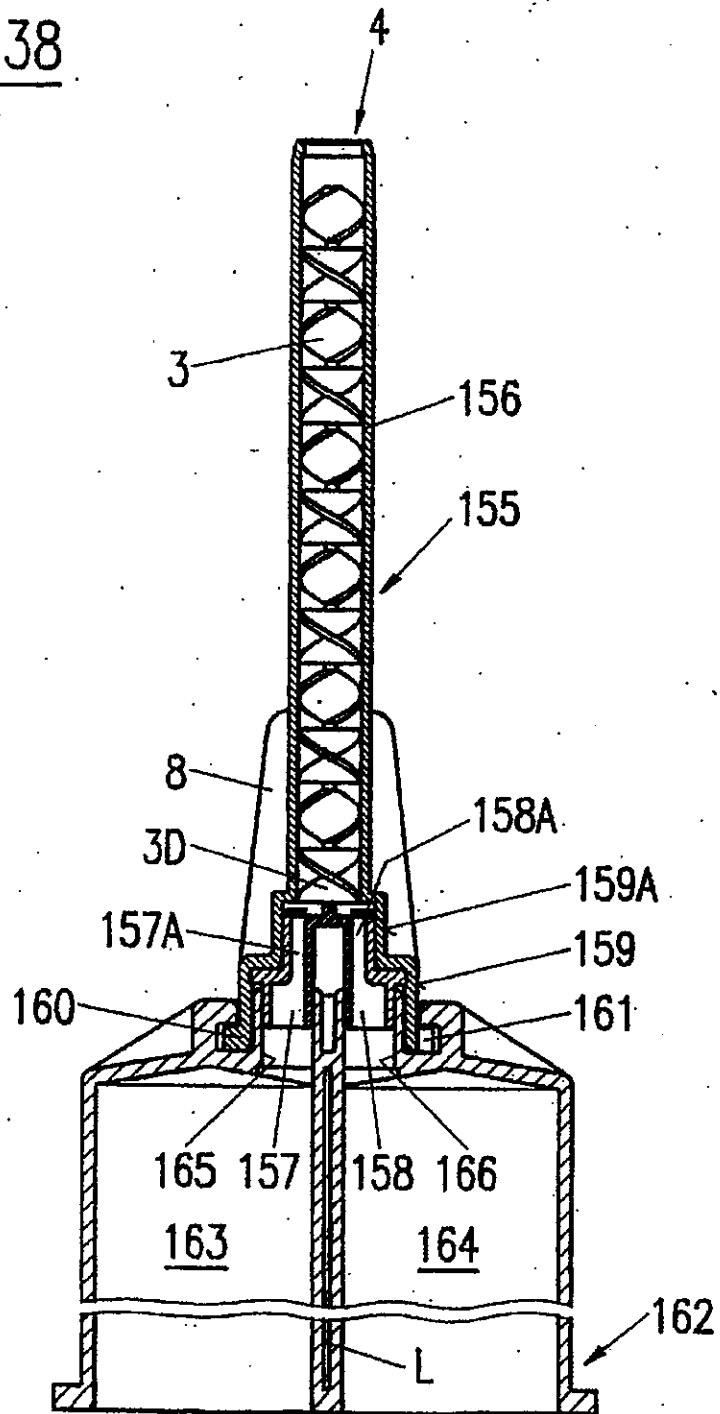
U.S. Patent

Jul. 6, 1999

Sheet 21 of 29

5,918,772

FIG. 38



U.S. Patent

Jul. 6, 1999

Sheet 22 of 29

5,918,772

FIG. 39

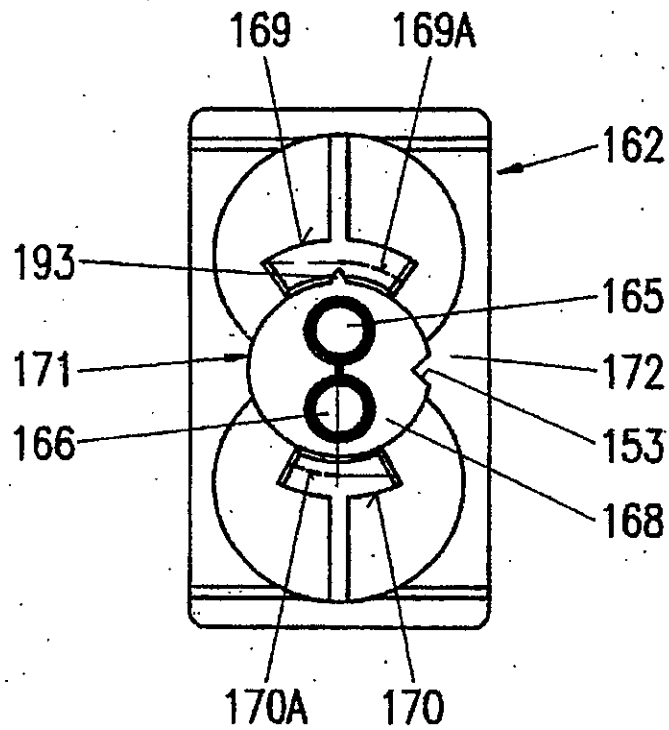
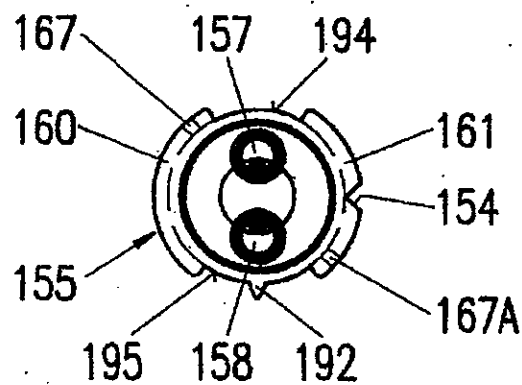


FIG. 40



U.S. Patent

Jul. 6, 1999

Sheet 23 of 29

5,918,772

FIG. 41

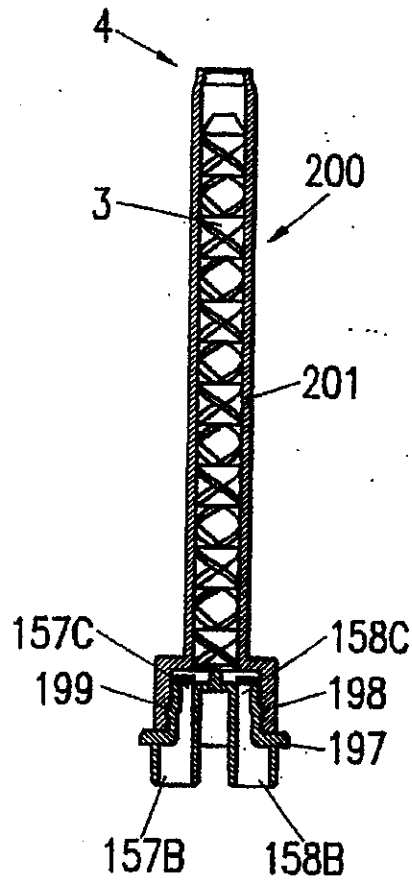


FIG. 42

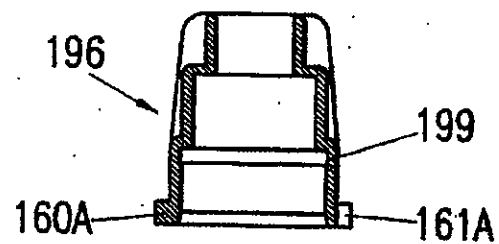
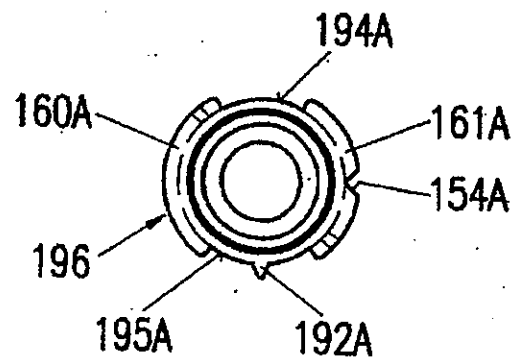


FIG. 43



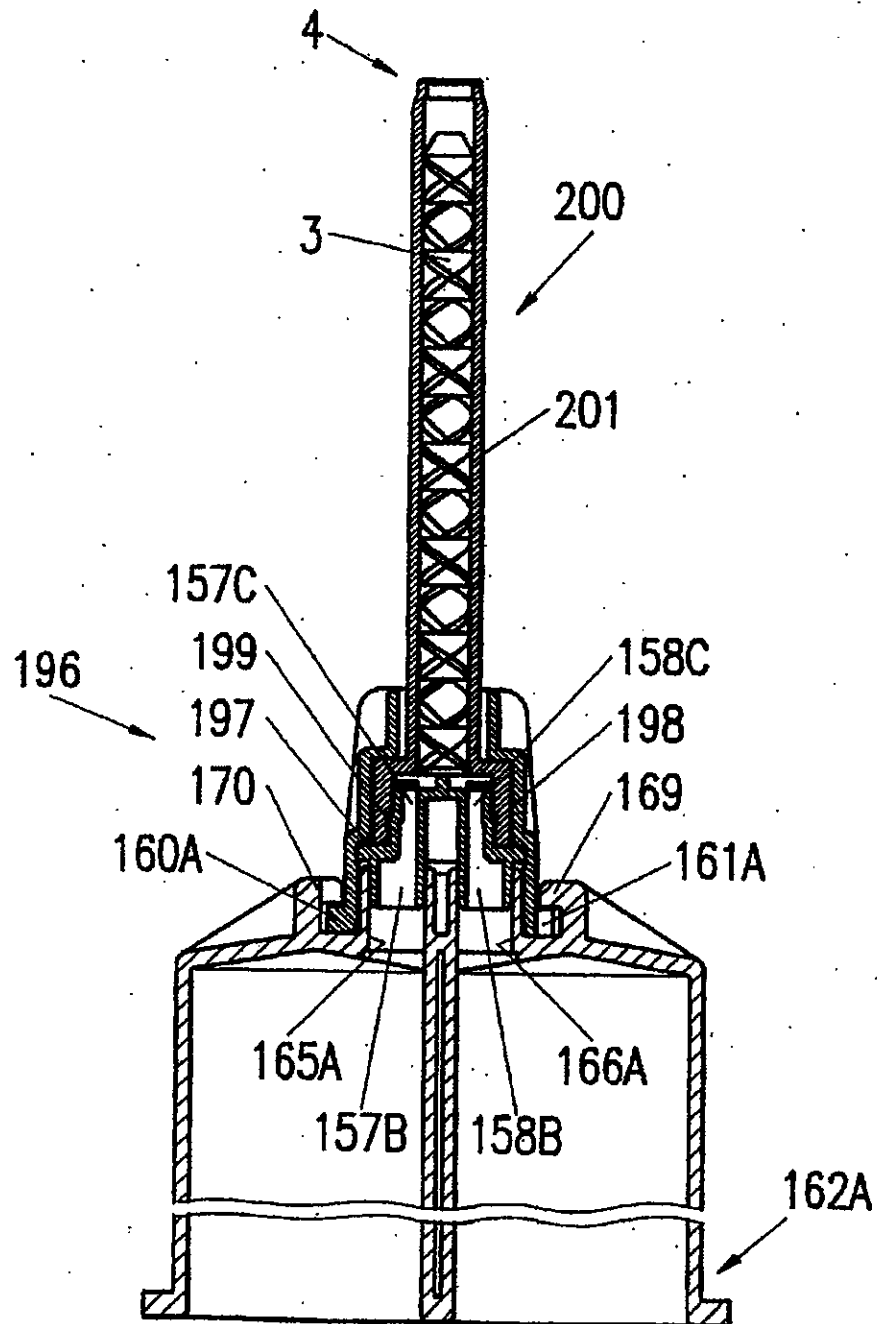
U.S. Patent

Jul. 6, 1999

Sheet 24 of 29

5,918,772

FIG. 44



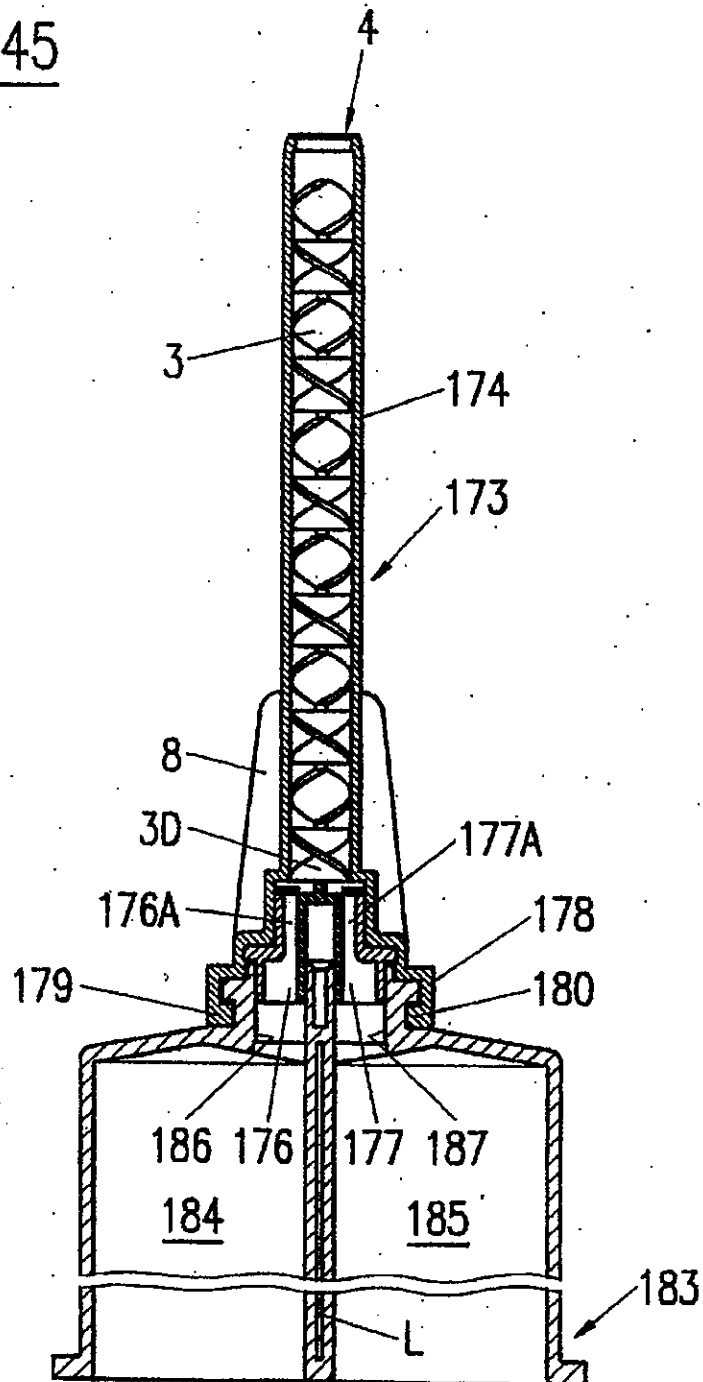
U.S. Patent

Jul. 6, 1999

Sheet 25 of 29

5,918,772

FIG. 45



U.S. Patent

Jul 6, 1999

Sheet 26 of 29

5,918,772

FIG. 46

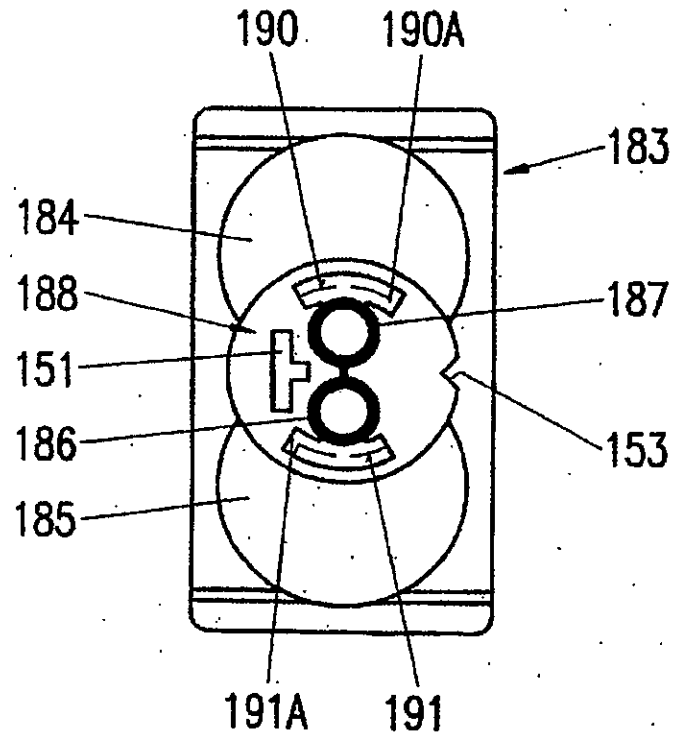
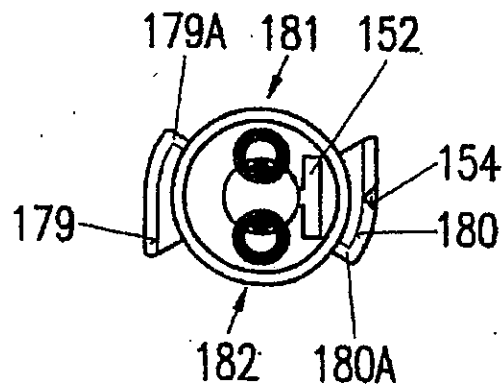


FIG. 47



U.S. Patent

Jul. 6, 1999

Sheet 27 of 29

5,918,772

FIG. 48

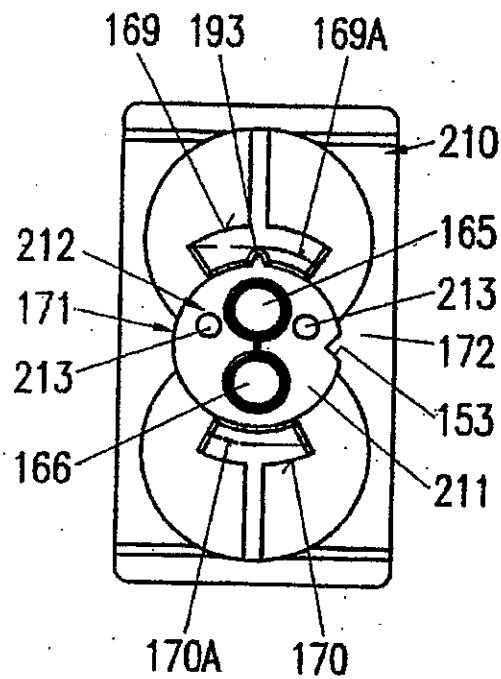


FIG. 50

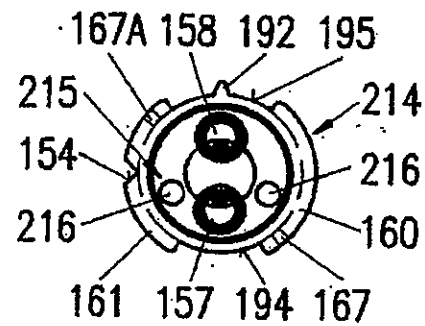
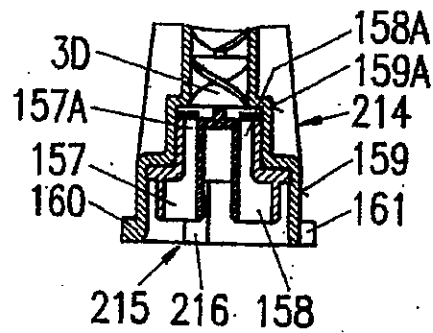


FIG. 49



U.S. Patent

Jul. 6, 1999

Sheet 28 of 29

5,918,772

FIG. 51

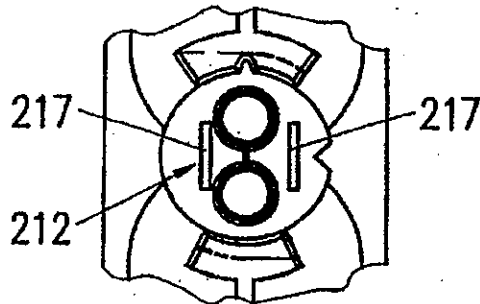


FIG. 52



FIG. 53

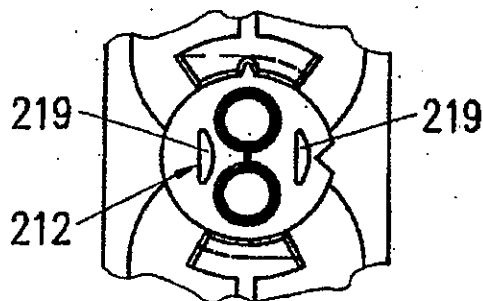


FIG. 54

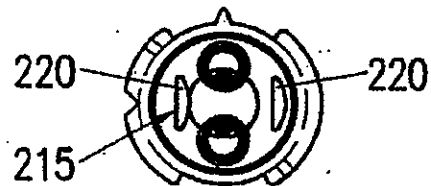


FIG. 55

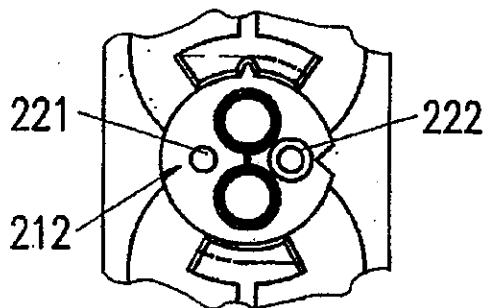
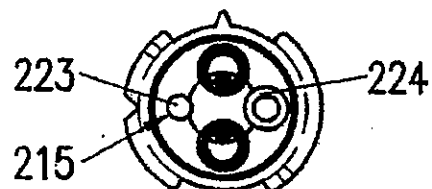


FIG. 56



U.S. Patent

Jul. 6, 1999

Sheet 29 of 29

5,918,772

FIG. 57

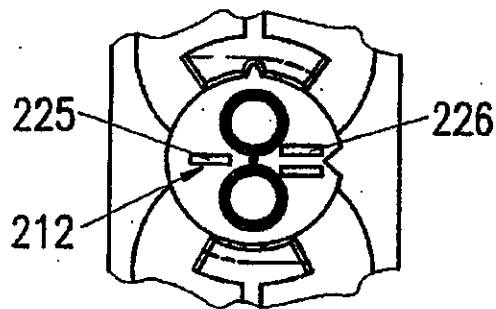
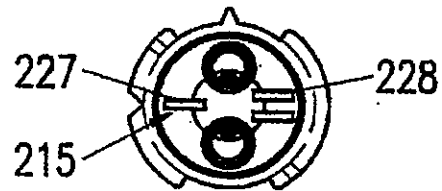


FIG. 58



5,918,772

BAYONET FASTENING DEVICE FOR THE ATTACHMENT OF AN ACCESSORY TO A MULTIPLE COMPONENT CARTRIDGE OR DISPENSING DEVICE

CROSS-REFERENCE

The present application is a continuation in part of patent application Ser. No. 08/403,172 filed Mar. 13, 1995, now abandoned, and of the continuation in part of patent application Ser. No. 08/522,109, filed Aug. 31, 1995 now abandoned.

BACKGROUND OF THE INVENTION

The present invention relates to a bayonet fastening device for the attachment of an accessory to a dispensing device, in particular for the attachment of a mixer to a two-component cartridge.

There exists a great number of mixers and cartridges having means for attaching the mixer to the cartridge, e.g., according to U.S. Pat. No. 4,767,026 or U.S. Pat. No. 4,538,920 where the mixer has two bayonet locking lugs inserted into corresponding prongs on the cartridge by rotation. On one hand, the rotary locking movement of the complete mixer will cause contamination of one chemical component against the other chemical component at the interface between the cartridge and the mixer, in that these components will be transported from one outlet to the other outlet, from one inlet to the other inlet, causing an undesired reaction between these chemical components at the interface between cartridge and mixer or closure means, and eventually carrying such a reaction back into the cartridge outlets, thus causing plugging of the outlets. On the other hand there exist situations where it is necessary to connect and attach the mixer or accessory to a multiple component cartridge or dispensing device in a predetermined position, such as when cartridge outlets or mixer inlets are of a different size for different relative mixing ratios or when mixers or accessories are refitted for reuse.

There exists a need to connect and attach a mixer or accessory to a multiple component cartridge or dispensing device in a predetermined orientation, such as when cartridge outlets or mixer inlets are of a different size for different relative mixing ratios or when special high ratio mixers are used for greater mixing efficiency and when mixers or accessories are refitted for reuse. In the latter case of reuse, it is necessary to avoid any possibility of cross contamination of one chemical component against another during refitting. Such cross contamination of reactive chemical systems can cause plugging at the cartridge outlets and cause a reaction back into and within the cartridge.

U.S. Pat. No. 5,228,599 discloses a multiple dispensing cartridge having a mixer attached thereto with the aid of a coupling nut having an internal thread, wherein each storage cylinder ends in a dispensing opening which forms a side by side outlet, whereas the inlet of the mixer is not defined. The mixer is put on the cartridge and secured by a coupling nut via an external thread at the cartridge.

Another cross contamination situation can occur when a clean mixer or accessory inlet area or closure plugs are able to make any form of incorrect alignment contact, such as by angular tipping, with the chemical components at the cartridge outlet area during the process of initial placing of the mixer or closure plugs against the cartridge in preparation for attachment. In that case, when fitting the same mixer or closure plugs in the correct position, it is possible to now chemically contaminate the outlets of the cartridge. Again, this can cause plugging and a reaction back into and within the cartridge.

Finally, all bayonet attachment means of the prior art have, in common, that the bayonet prongs of the cartridge are relatively small and therefore of limited structural rigidity and strength. This allows the possibility of distortion and is of greater significance due to the trend towards smaller mixer diameters and therefore high backpressures, the result being leakage at the mixer to cartridge sealing interface during dispensing.

SUMMARY OF THE INVENTION

On the basis of this prior art, it is an object of the present invention to provide for a bayonet attachment device for attaching a mixer, or closure means or any other accessory, such as an adapter or a connecting tube to a multiple component dispensing device, in particular a two component cartridge, which has improved strength and structural rigidity against stress caused by greater hydraulic forces due to the trend towards smaller mixer diameters as well as providing improved interface sealing.

This object is attained with a device wherein said bayonet attachment means at the dispensing apparatus or cartridge is formed as ring-shaped bayonet socket, with at least two internal recesses or an inner circular groove with at least two bayonet cutout followed by adjacent bayonet retaining means, and wherein the bayonet attachment means of the accessory comprises at least two bayonet lugs corresponding to the cut outs.

It is another object of the invention that alignment of the accessory inlets to the cartridge outlets takes place in one position only to avoid cross contamination. This object is attained with a device wherein said bayonet attachment means at the dispensing apparatus or cartridge and at the accessory have means for coded alignment of the accessory to the dispensing apparatus or cartridge.

Other objects and improvements of the device are defined in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be explained in more detail hereinafter with reference to a drawing of embodiments. FIGS. 1-6 show a first embodiment of the invention with a rotatable mixer housing, wherein

FIG. 1 is a longitudinal section of a mixer,

FIG. 2 is a view of the inlet end of the mixer,

FIG. 3 is a longitudinal section of a cartridge,

FIG. 4 is a top view of the cartridge of FIG. 3 with distanced outlets and ring-shaped bayonet means,

FIG. 5 is a longitudinal section of a cartridge having two containers with different cross-sectional areas,

FIG. 6 is a top view of the cartridge of FIG. 5 with distanced outlets and ring-shaped bayonet means.

FIGS. 7-13 show a second embodiment of the invention comprising a coupling ring, wherein

FIG. 7 is a longitudinal section of a mixer,

FIG. 8 is a view of the inlet end of the mixer,

FIG. 9 is a longitudinal section of a cartridge with distanced outlets and ring-shaped bayonet means,

FIG. 10 is a top view of the cartridge of FIG. 9 with a nose piece,

FIG. 11 is a top view of a coupling ring,

FIG. 12 is a section of the coupling ring of FIG. 11,

FIG. 13 is a longitudinal section of a variant of the mixer of FIG. 7 and 8 attached to the cartridge of FIGS. 5 and 6 having containers with different cross-sectional areas.

FIGS. 14-19 show a third embodiment of the invention with a locking ring permanently attached to the cartridge, wherein

5,918,772

3

FIG. 14 is a longitudinal section of a cartridge with distanced outlets,

FIG. 15 is a top view of the cartridge of FIG. 14,

FIG. 16A is a view on the mixer side of a locking ring to be attached to the cartridge,

FIG. 16B is a view on the cartridge side of the locking ring of FIG. 16A,

FIG. 17 is a section of the locking ring according to the line XVII—XVII of FIG. 16B,

FIGS. 18 and 19 show in two longitudinal sections at 90° to each other a mixer attached to the cartridge of FIG. 14 with the locking ring of FIGS. 16A–17, in the locked position,

FIGS. 20–25 show three embodiments of a closure cap for the cartridge, wherein

FIGS. 20–21 show as first embodiment a two part closure cap in a longitudinal section and a view on its cartridge side face,

FIGS. 22–23 show as second embodiment a one part closure cap for use with a coupling ring in a longitudinal section and a view on its cartridge side face,

FIGS. 24–25 show as third embodiment a one part closure cap for use with a locking ring attached to the cartridge in a longitudinal section and a view on its cartridge side face,

FIGS. 26–28 show an alternative embodiment of the invention with a ring-shaped bayonet socket at the rotatable mixer housing, wherein

FIG. 26 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 27 is a view of the inlet end of the mixer, and

FIG. 28 is a top view of the cartridge of FIG. 26.

FIGS. 29–31 show a further embodiment of the invention with a ring-shaped bayonet socket at the cartridge, wherein

FIG. 29 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 30 is a view of the inlet end of the mixer, and

FIG. 31 is a top view of the cartridge of FIG. 29.

FIGS. 32–34 show a further embodiment of the invention with a ring-shaped bayonet socket at the cartridge, wherein

FIG. 32 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 33 is a view of the inlet end of the mixer, and

FIG. 34 is a top view of the cartridge of FIG. 32,

FIGS. 35–37 show an further embodiment of the invention with a sector-shaped bayonet socket at the cartridge, wherein

FIG. 35 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 36 is a top view of the cartridge of FIG. 35, and

FIG. 37 is a view of the inlet end of the mixer.

FIGS. 38–40 show an alternative embodiment of the invention with a sector-shaped bayonet socket at the cartridge, wherein

FIG. 38 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 39 is a top view of the cartridge of FIG. 38, and

FIG. 40 is a view of the inlet end of the mixer.

FIGS. 41–44 show a further embodiment of the invention with a coupling ring, wherein

FIG. 41 is a longitudinal section of a mixer,

FIG. 42 is a longitudinal section of a coupling ring,

FIG. 43 is a top view of the coupling ring of FIG. 42, and

FIG. 44 is a longitudinal section of the mixer attached to a partially shown cartridge via the coupling ring.

FIGS. 45–47 show a further embodiment of the invention with a sector-shaped bayonet socket at the mixer, wherein

FIG. 45 is a longitudinal section of a mixer attached to a partially shown cartridge,

4

FIG. 46 is a top view of the cartridge of FIG. 41; and

FIG. 47 is a view of the inlet end of the mixer.

FIGS. 48–58 show several further coding means at both the cartridge and the mixer for preventing cross-contamination by erroneous attachment of the mixer onto the cartridge, wherein

FIG. 48 is a top view of a cartridge like in FIG. 39, with additional coding means,

FIG. 49 is a section of the inlet end of a mixer like in FIG. 38, with additional coding means,

FIG. 50 is a view of the inlet end of the mixer of FIG. 49.

FIGS. 51 and 52 show a variant of the coding means at the cartridge and mixer.

FIGS. 53 and 54 show a further variant of the coding means at the cartridge and mixer.

FIGS. 55 and 56 show a further variant of the coding means at the cartridge and mixer.

FIGS. 57 and 58 show a further variant of the coding means at the cartridge and mixer.

DETAILED DESCRIPTION OF THE INVENTION

FIGS. 1–2 show a mixer 1 comprising a mixer housing 2, a mixer element group 3, the mixer outlet 4 and a mixer inlet section 5 with two separated inlet parts 6 and 7, which are integral with a properly aligned separating element 3S of the mixer element group 3. This mixer is attached to the cartridge by matching the mixer different width bayonet lugs 10, 11 to the different width bayonet sockets 19, 20 while pressing the mixer onto the cartridge and by rotating the mixer housing 2. The separated inlet parts 6 and 7 and the mixer element group 3 with the separating element 3S do not rotate. Separating element 3S serving in this embodiment as a separating means for guiding each chemical component separately to the first dividing element 3D of the mixer element group 3.

The mixer housing is provided with longitudinal ribs 8 that end at the larger diameter 9 of the mixer housing 2. The two lateral ends of the ribs are formed as bayonet lugs 10 and 11 cooperating with the bayonet retaining means of the cartridge. As follows from FIG. 2, the two lugs do not have the same width, lug 10 being larger than lug 11. As will be shown later, the different width of the lugs enable a coded alignment and attachment of the mixer to the cartridge.

The mixer element group 3 is connected to the separated inlet parts 6 and 7 and is disposed in such a way within the housing that the housing itself is rotatable around the mixer element group 3 with attached inlet parts 6 and 7, which are arranged at the inlet side of the first mixer element 3S serving in this embodiment as a separating means for guiding each component separately to the first dividing element 3D of the mixer element group 3.

In FIG. 3, the cartridge 12 comprises two cylindrical containers or chamber 13 of equal cross-sectional areas for a 1:1 metering ratio ending in two individual, separate cylindrical and distal outlets 14 and 15. The outside shapes of the distal outlets 14 and 15 of the cartridge correspond to the respective inside shapes of the separate inlets 6 and 7 of the mixer. (see FIG. 1), whereby the inlets of the mixer fit over the outlets of the cartridge for tightly sealed connections. A reverse arrangement, where the inlet parts 6 and 7 fit into the outlet openings 14 and 15 is also possible.

In FIG. 4, the bayonet means 16 at the cartridge comprises a ring-shaped bayonet socket 17 with two internal recesses 18 and a circular opening with two diametrically opposed different width bayonet cutouts 19 and 20 for receiving the

5,918,772

5

corresponding different width bayonet lugs 10 and 11, (see FIG. 1), of the mixer, allowing coded introduction of the mixer in one predetermined position only. The flange parts 21 adjacent to the cutouts serve as bayonet retaining means for securing the lugs of the mixer.

The ring-shaped bayonet means provides, in particular, for increased strength of the bayonet retaining means and increased structural rigidity of the outlet end of the cartridge when, during dispensing, the hydraulic forces transmitted from the attached mixer are at a maximum. This arrangement is a substantial improvement in comparison with the prior art bayonet prongs.

FIGS. 5 and 6 show a variant to the embodiment shown in FIGS. 1-4 in that the containers 22 and 23 of cartridge 24 have different cross-sectional areas for metering ratios other than 1:1.

In both described cases, in order to attach the mixer to the cartridge, the mixer can only be aligned with its bayonet lug widths corresponding to the different width cut outs of the bayonet sockets, then pressed onto the cartridge such that when the mixer is in place and the outlets and inlets are connected, the mixer housing 2 is rotated by 90° for the engagement of the bayonet lugs 10, 11 in the bayonet retaining means 21 of the cartridge. This attachment method prevents contamination of one component by the other at the mixer-cartridge interface yet enabling a quick coded attachment of the mixer.

FIGS. 7 and 8 show in a second embodiment a mixer 25 comprising a mixer housing 26, a mixer element group 3, a mixer outlet 4, and a mixer inlet section 27. This mixer is fixed to the cartridge (see FIG. 9) with the aid of a separate coupling ring (see FIGS. 11 and 12). The coupling ring 31 is provided with two bayonet lugs 32 and 33 corresponding to the bayonet cutouts 19, 20, respectively of the bayonet attachment means 16 at the cartridge. For better manual gripping, ribs 34 are provided on the outer cylindrical surface.

It follows in particular from FIG. 7 that the mixer inlet section 27 comprises two cylindrical, individual inlet openings 28, 29 at the inlet side face of the first mixer element 3S serving in this embodiment as a separating means for guiding each component separately to the first dividing element 3D of the mixer element group 3. A slot 30 provides for a coded alignment of the mixer in regard to a cartridge.

Cartridge 35 (see FIGS. 9 and 10) is the same as cartridge 1 of FIG. 1 with the exception that the bottom of the bayonet attachment means 16 comprises a nose piece 36 corresponding to the slot 30 at the mixer (see FIGS. 7 and 8) for coded alignment of the mixer.

When connecting the mixer to the cartridge, the nose piece 36 on the cartridge fits into slot 30 of the mixer inlet section 27. This coded connection method assures not only one alignment possibility but also axial mixer attachment without rotation of the mixer housing, thus preventing contamination of one component by the other at the cartridge/mixer interface.

There are other coding means possible at the dispensing apparatus or cartridge and at the accessory for the coded alignment of the accessory to the dispensing apparatus or cartridge, e.g. pins or protruding parts of all kind fitting into a recess or cavity or slot.

FIG. 13 shows a mixer 38 attached to a cartridge 75 having containers 76 and 77 with different cross-sectional areas, as a variant to the embodiment shown in FIGS. 5-12 in that the mixer inlet section 37 of mixer 38 has a separating means within the mixer, which separating means comprises

6

separated inlet chambers 39, 40, respectively having different cross-sectional areas, and lodged within a smaller combined diameter than the cartridge outlet with corresponding openings for each chamber for material to pass through.

The aforementioned separating means serves to maintain separation of the material flows up to the first dividing element 3D of the mixer element group 3. This separating means can have chambers with equal cross-sectional areas or have a cross-sectional area ratio other than 1:1. For example, the ratio of the cross-sectional areas of the separating chambers can be adapted to the cross-sectional areas of the containers 76 and 77 of cartridge 75, respectively to its metering ratio. The separating means is fixedly connected to the mixer element group 3.

The cartridge 75 has the same attaching means as in FIGS. 5 and 6, and the mixer 38 is attached to the cartridge by means of the coupling ring 31.

The third embodiment of the invention according to the FIGS. 14-19 comprises a locking ring 51 that is snapped onto and permanently attached to the cartridge 42. The cartridge 42 comprises two cylindrical containers or chambers 43 of equal cross-sectional area, two distal outlets 45 and 46, and an attaching means 47 for attaching the locking ring 51 and for limiting its rotational movement. The form of the attaching means 47 is a circular edge 49 with two lugs 44 of same width and arranged around the two distal outlets with a circular undercut 48 at its base.

The locking ring 51 (see FIGS. 16A and 16B) and 17, snaps over circular edge 49 of the attaching means of the cartridge and remains attached to it. The locking ring 51 has an inner circular groove 52 forming a cartridge side edge 53 and a mixer side edge 54. The cartridge side edge 53 has two opposed cutouts 55, the width of which corresponds to the lugs 44 of the attaching means whereby the inner diameter of the cartridge side edge 53 is slightly smaller than the outer diameter of the circular edge 49 of the attaching means of the cartridge. For snapping the locking ring to the cartridge, the ring is positioned so that the cutouts of its cartridge side edge are placed above the lugs of the attaching means and the ring is then pushed onto the cartridge so that the remaining cartridge side edge of the locking ring slides into the circular undercut 48 of the attaching means. The locking ring is also provided with a serration 58 for better manual gripping.

The mixer side edge 54 has two opposite cutouts 56 and 57 of different width corresponding to the lugs 10 and 11 of the mixer for insertion in one position only. These two cutouts are arranged at 90° to the cutouts 55 of the cartridge side edge. Thus, when the mixer 59 is to be attached to the locking ring on the cartridge and the locking ring is rotated by 90°, the remaining inside flange parts of both the cartridge side edge and the mixer side edge serve as bayonet retaining means to encompass the mixer lugs 10 and 11 as well as the lugs 44 of the attaching means 47 of the cartridge for strong securement.

FIGS. 18 and 19 show cartridge 42 of FIG. 14 with a mixer 59, which is similar to mixer 1 of FIG. 1 with the same mixer inlet section 5 with separate female inlets 6 and 7, except that the housing 60 is not rotatable around the integral internal parts of the mixer and has no ribs 8, and the two bayonet lugs 10 and 11 are of different widths. FIG. 18 shows the mixer introduced within the locking ring 51 with the locking ring in its locked position and FIG. 19 shows a section along the line XIX-XIX in FIG. 18 of the same assembly at 90°. It is evident that a mixer with separated inlet chambers can be attached likewise and also that a

5,918,772

7

cartridge may be one having containers with different cross-sectional areas as in FIG. 5.

The above described system of the coded attachment of the mixer also allows for the coded attachment of closure caps, adapters etc., thus preventing cross contamination and allowing closure cap re-use.

The first embodiment of a coded closure cap 61, FIGS. 20 and 21, consists of two parts. The insert 62 has two male plugs 63 for closing the outlets of a cartridge, for example the distanced outlets 14 and 15 of cartridge 12 of FIG. 3.

In this embodiment it is shown how the sealing effect of a plug at the cartridge outlet can be improved by providing the male plug 63 with a second rim 63A reaching over the female cartridge outlet. The provision of such a male plug with a circumferential rim is of course not limited to this example.

The rotatable attaching means has two bayonet lugs 64 and 65 of different widths corresponding to the lugs 10 and 11 of mixer 1 of FIG. 1. The outer surface of the cap is provided with ribs 66 and a collar 70 for better gripping. The coded attachment of the closure cap to cartridge 12 or 24 is analogous to the attachment of mixer 1.

The second embodiment, FIGS. 22 and 23, consists of a coded closure cap 67, which also has two plugs 68 for closing the outlets of a cartridge, for example the distanced male outlets 14 and 15 of cartridge 35 of FIG. 9, and a slot 69 similar to slot 30 at mixer 25 for coded cooperation with nose piece 36 of cartridge 35. The outer surface of the cap is also provided with a collar 70 for better manual gripping. The attachment of the cap to cartridge 35 is achieved with coupling ring 31 of FIG. 11, analogous to the attachment of mixer 25 to that cartridge.

The third embodiment of a coded closure cap 71, FIGS. 24 and 25, is similar to the second embodiment and comprises two plugs 72 for closing the distanced male outlets 45 and 46 of cartridge 42 of FIG. 14. FIG. 25 shows the cartridge side of the closure cap with two bayonet lugs 73, 74 of different width and diametrically opposed on the edge facing the cartridge. This closure cap is attached by means of the locking ring 51 of FIGS. 18 and 19 and is also provided with a collar 70 for better manual gripping.

The ring-shaped bayonet attachment means of the cartridge ensures a better stability of its outlet area and stronger retaining of the bayonet lugs compared with prior art bayonet attachment means.

In the case of utilizing the advantages of the ring-shaped bayonet socket alone and without the need for coded attachment, the bayonet lugs 10 and 11, 32 and 33, 64 and 65 at the mixer or closure cap or accessory as well as the corresponding bayonet cutouts 19 and 20 at the retaining means at the cartridge or 56 and 57 at the locking ring 51, may have the same widths. This applies also in the case when more than two lugs and corresponding cutouts are used, for example three or four respectively.

The FIGS. 26-28 show a further embodiment of the invention with an inverse bayonet arrangement as compared with those of the bayonet arrangement of the mixer and cartridge according to FIGS. 1-4. FIG. 26 shows a mixer 80 comprising a mixer housing 81 with mixer outlet 4 and a mixer inlet section 82 containing two separated inlet parts 83 and 84 followed by a separating element 3S, which in turn is fixedly attached to a properly aligned element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by matching the coding means of mixer and cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 81 of the mixer about the integral

8

internal mixer parts comprising separate female inlets 83 and 84, the separating element 3S and the mixer element group 3. The mixer element group or part thereof could also be prealigned and be fixedly assembled within the mixer housing.

The mixer housing 81 is provided with longitudinal ribs 8, which end at the larger diameter 85. The larger end of the mixer housing has a nose piece 89, which provides a highly visible coded guide for alignment and insertion into the slotted prong 90 of the cartridge. The mixer housing 81 is also provided with a ring shaped bayonet socket attachment means 100 comprising two bayonet flange parts 94 and 95 acting as bayonet retaining means, having two cut outs 96 and 97 in between.

The cartridge 86 has two cylindrical containers 87 and 88 with the distanced outlets 14 and 15 for fitting and sealing within the mixer inlet section 82. The cartridge front 86A is provided with a slotted prong 90 and a guide piece 91 for preventing incorrect insertion of the mixer and further with two bayonet flanges 92 and 93 with tapered wedge shaped edges, corresponding in width with the mixer cutouts 96 and 97, and with reduced diameter cutouts 98 and 99 in between.

For attaching the mixer to the cartridge, the mixer inlet part 82 is introduced into the cartridge by aligning the nose piece 89 of the mixer housing within the slotted prong 90 while the part 91 acts as a guide piece as the mixer inlets are pushed onto and over the cartridge distanced male outlets 14 and 15 such that the cartridge flanges 92 and 93 correspond to and enter within the mixer cutouts 96 and 97. Upon rotating the mixer housing, the mixer bayonet flange parts 94 and 95 progressively move against the cartridge flanges 92 and 93, because of their tapered wedge shaped depth, forcing the mixer 80 against the cartridge front 86A. During this mixer to cartridge attachment, the mixer housing 81 rotates 90° about the stationary integral internal mixer parts.

The above bayonet arrangement, wherein the ring-shaped bayonet socket is at the accessory, as shown for a rotating mixer housing, can also be used in analogous manner for previously shown embodiments and for the closure caps, with the exception of the locking ring solutions. Alternative coding means arranged around the outer periphery of the mixer housing are possible or is achieved by different widths of cutouts and matching flange parts.

FIGS. 29-31 show a further embodiment wherein the mixer is provided with male inlet parts fitting into and sealing within the female cartridge outlets.

FIG. 29 shows a mixer 101 comprising a mixer housing 102 with mixer outlet 4 and a mixer inlet section 103 containing two separate male inlets 104 and 105 followed by a separating element 3S which in turn is fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by matching the coding means of the mixer to the coding means of the cartridge, by pressing the mixer onto the cartridge and by rotating the mixer housing 102 about the integral internal mixer parts comprising separate male inlets 104 and 105, the separating element 3S and the mixer element group 3. The mixer element group or part thereof could also be prealigned and be fixedly assembled within the mixer housing.

The mixer housing 102 is provided with longitudinal ribs 8 which end at the larger diameter 106, the two lateral ends of, which are formed as bayonet lugs 107 and 108, FIG. 30, cooperating with the bayonet retaining means of the cartridge. The bayonet lugs do not have the same width, lug 107 being larger.

5,918,772

9

The cartridge 109, FIG. 31, has two cylindrical containers 110 and 111 with the distanced female outlets 112 and 113 for fitting and sealing over the male mixer inlets 104 and 105. The cartridge front 114 is provided with the same bayonet means 16 as the cartridge of FIG. 4, comprising a ring shaped bayonet socket.

FIGS. 32-34 show a further embodiment wherein the mixer is provided with a male and a female inlet part fitting and sealing into/over the female/male cartridge outlets.

FIG. 32 shows a mixer 115 comprising a mixer housing 116 with outlet 4 and a mixer inlet section 117 containing a separate male inlet 118 and a separate female inlet 119 followed by separated chambers 117A and 117B, which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 116 about the integral internal mixer parts comprising separate male inlets 118 and 119, the separated chambers 117A and 117B and the mixer element group 3. The mixer element group or part thereof could also be prealigned and be fixedly assembled within the mixer housing.

The mixer housing 116 is provided with longitudinal ribs 8, which end at the larger diameter 120, the two lateral ends of which are formed as bayonet lugs 121 and 122, FIG. 33, cooperating with the bayonet retaining means of the cartridge. The bayonet lugs do not have the same width, bayonet lug 121 being larger.

The cartridge 123 has two cylindrical containers 124 and 125 with one distanced male outlet 126 and one distanced female outlet 127 for, respectively, fitting and sealing within the separate female inlet 119 and over the separate male inlet 118 of the mixer. The cartridge front 128, FIG. 34, is provided with the same bayonet means 16 as the cartridge of FIG. 4, comprising a ring shaped bayonet socket.

The embodiments of FIGS. 35-43 show sector-shaped bayonet sockets instead of complete ring-shaped ones. The function and the attaching of the accessory are the same as in the previous embodiments, so that the three different embodiments of the bayonet means are illustrated in one respective example of mixer and cartridge. It is obvious that the sector-shaped bayonet socket and similar means can be provided on all other embodiments also.

FIG. 35 shows a mixer-cartridge assembly with a mixer 130 comprising a mixer housing 131 with outlet 4 and a mixer inlet section 132 containing two separate male inlets 133 and 134 followed by separating chambers 133A and 134A which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 131 about the integral internal mixer parts comprising separate male inlets 133 and 134, the separated chambers 133A and 134A and the mixer element group 3. The mixer element group or part thereof could also be prealigned and be fixedly assembled within the mixer housing.

The mixer housing 131 is provided with longitudinal ribs 8 which end at the larger diameter 135, the two lateral ends of which are formed as bayonet lugs 136 and 137, FIG. 37, cooperating with the sector-shaped bayonet sockets 145, 146, serving as bayonet retaining means of the cartridge. The bayonet lugs have the same width and are provided each with a rib 136A and 137A at its end which both strengthen each lug and acts as a stop as well as ensuring that the mixer can be turned and attached in one direction only. The upper surface of the lugs may have inclined surface parts so as to

10

enforce the locking ability by an axial load. Corresponding inclined surface parts may also be located on the corresponding surface of the cartridge sector shaped bayonet sockets.

The cartridge 138 has two cylindrical containers 139 and 140 with two distanced female outlets 141 and 142 for receiving and sealing over the separate male inlets 133 and 134. The cartridge front 143, FIG. 36, is provided with bayonet means comprising sector-shaped bayonet sockets 145, 146 which act as prongs and are closed on one side by a rib 145A and 146A which connects to the cartridge end wall so as to stiffen and increase the strength of the bayonet prong. The cutouts 149 and 150 between the sector shaped bayonet sockets allow for the introduction of the mixer bayonet lugs 136 and 137.

In this embodiment the bayonet lugs and the sector-shaped bayonet sockets have approximately the same width. The coding is achieved by other coding means on the mixer and on the cartridge. The cartridge front 143 is provided with a T-shaped protrusion 151 arranged between the two outlets and the mixer inlet face is provided with a similar protrusion 152 arranged off centre between the mixer inlets, see FIGS. 36 and 37.

The two T-shaped coding means allow the attachment of the mixer in one orientation only since, when putting the mixer onto the cartridge such that when the two protrusions are laying one upon the other, they will prevent the introduction of the mixer inlets into the cartridge outlets and also any contact between the cartridge outlets and the mixer inlets or plugs of closure means thus preventing cross contamination and prohibiting mixer/accessory attachment. It is obvious that the coding protrusions can have any shape other than a T-form, and could be, e.g., in the form of a keyway allowing only one defined position in which to introduce the mixer having a corresponding protrusion, or two differently shaped keyways and corresponding protrusions.

The coded alignment can be facilitated by visual coding means, e.g., a marking 153 at the cartridge outlet end and a marking 154 at the bayonet lug 137 of the mixer on the same side as the coding protrusion.

In the embodiment of FIGS. 38-40, the coding is achieved by cutouts of different widths between the lugs. FIG. 38 shows a mixer-cartridge assembly with a mixer 155 with a mixer housing 156, outlet 4 and integral internal mixer parts comprising two separate inlets 157 and 158 ending into a disc-shaped flange and followed by separated chambers 157A and 158A which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 156 about the integral internal mixer parts. The mixer element group 3 or part thereof, may also be prealigned and fixedly assembled within the mixer housing.

The mixer housing 156 is provided with longitudinal ribs 8, which end at the larger diameter 159, the two lateral ends of which are formed as bayonet lugs 160 and 161, FIG. 40, cooperating with the sector shaped bayonet retaining means of the cartridge. In this FIG. 38 and also in FIGS. 39, 40, 41 and 42 it is shown that the inlet end of the mixer housing has not only one cylindrical enlargement but two, e.g., one 159 at the inlet, lodging and sealing against the separate inlets 157, 158, followed by the second part 159A having an intermediate diameter and lodging and sealing against the separating means 157A, 158A. The bayonet lugs have the same widths but the gaps or cutouts 194, 195 between them

5,918,772

11

are different, corresponding to the different widths of the sector shaped bayonet sockets on the cartridge.

These bayonet lugs 160, 161, can be provided each with a rib 167, FIG. 40, on the reverse side of the mixer inlet which both strengthen the lug and act as stop as well as limiting rotation in one direction only so as to prevent the mixer from being attached at 180° to the correct alignment. The upper surface of the lugs may have inclined parts, not shown, so as to enforce the locking and sealing ability by an axial force. Corresponding inclined parts, not shown, may also be located on the corresponding surface of the cartridge sector shaped bayonet sockets.

The cartridge 162 has two cylindrical containers 163 and 164 with two distanced female outlets 165 and 166 for receiving and sealing over the separate male inlets 157 and 158. The cartridge front 168, FIG. 39, is provided with bayonet means, comprising two sector-shaped bayonet sockets.

In FIG. 39, the bayonet means at the cartridge comprises two diametrically opposed sector-shaped bayonet sockets 169 and 170 acting as bayonet prongs for the bayonet lugs of the mixer, the two sockets having different widths, socket 169 having the greater width. The two cut outs 171 and 172 between the sockets allow for the introduction of the corresponding mixer bayonet lugs 160 and 161 into the sector shaped bayonet sockets 169, 170. As shown in this Figure, the passages of the bayonet sockets 169 and 170 commence as straight passages but become curved from the mid point onwards so as to achieve a greater strength against bayonet lug axial forces.

The passages can be wholly curved, without straight parts, and wholly or partly curved passages can also be provided on the ring-shaped bayonet attachment means.

In order to prevent any inadvertent contact whatsoever of the mixer or accessory inlet or inlets with the cartridge outlet or outlets by any form of tilting or tipping of one against the other during incorrect alignment the larger cut out 195 at the mixer is provided with a V-shape nose 192 corresponding to a V-shape incision 193 at the larger socket 169 such that the mixer is kept outside of the narrower bayonet socket 170 by the V-shape nose 192.

In this embodiment also the coded alignment can be facilitated by visual coding means, e.g., marking 153 at the cartridge and marking 154 at the corresponding lug.

In case no univocal attachment of a mixer to the cartridge 162 is necessary the cut outs between the lugs of the mixer must be large enough to fit over the larger retaining means of the cartridge, whereas the visual coding means rest the same as previously described.

FIGS. 41-44 show a similar arrangement to that of the FIGS. 38-40 except that the mixer 200 is separate from coupling ring 196, the latter being rotated about the stationary mixer during the final rotary locking attachment of the coupling ring bayonet lugs 160A, 161A, into the sector shaped bayonet sockets 169, 170 of the cartridge 162.

FIG. 41 shows mixer 200 with the outlet 4 and comprising a housing 201 containing the mixer element group 3 in alignment with inlet part 197, the latter only partially contained within the mixer housing and comprising separate male inlets 157B, 158B and separate chambers 157C, 158C. A ridge 198 lodges and seals the inlet part 197 within the mixer housing. The coupling ring 196 is preassembled and prealigned with the mixer inlet part 197 via a groove 199, FIG. 41, in the coupling ring 196. FIG. 43 shows coupling ring 196 with the same coded bayonet lugs 160A, 161A, cut outs 194A, 195A, visual coding 154 and V-shape nose coding 192A as used in the embodiment according to FIG. 40.

12

FIG. 44 shows the mixer 200 and the cartridge 162 when assembled together. Prior to such assembly, the coupling ring 196 may be pre-assembled to the mixer under sufficient tension such that both components are held together in the correct relative alignment for initial visual coded and initial axial mechanical coded contact and attachment of the mixer inlets 157B, 158B to the cartridge outlets 165, 166 on the cartridge prior to the final rotary locking attachment of the coupling ring as described above. In this embodiment therefore, there is no rotation of the mixer housing 201 about the mixer inlet part 197 and element group 3 during attachment.

In the embodiment according to FIGS. 45-47 the sector-shaped bayonet sockets are at the mixer and the bayonet lugs at the cartridge, in analogy to the embodiment according to FIGS. 26-28.

FIG. 44 shows a mixer-cartridge assembly with a mixer 173 comprising a mixer housing 174 with outlet 4 and a mixer inlet section 175 containing the integral internal parts comprising two separate male inlets 176 and 177 followed by separated chambers 176A and 177A which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also, this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 174 about the separate male inlets 176 and 177, the separated chambers 176A and 177A and the mixer element group 3. The mixer element group or part thereof could also be pre-aligned and be fixedly assembled within the mixer housing.

The mixer housing 174 is provided with longitudinal ribs 8, which end at the larger diameter 178, the two lateral ends of which are formed as two diametrically opposed sector-shaped bayonet sockets 179 and 180 (see FIG. 43) acting as prongs which are both closed at one side by a rib 179A and 180A connecting to the mixer wall so as to stiffen and increase the strength of the bayonet prong. The cut outs 181 and 182, between the sockets, allow for the introduction of the cartridge bayonet lugs cooperating with the bayonet retaining means of the mixer.

The cartridge 183 has two cylindrical containers 184 and 185 with two distanced female outlets 186 and 187 for fitting and sealing over the separate male inlets 176 and 177. The cartridge front 188, FIG. 42, is provided with bayonet means, comprising sector-shaped bayonet lugs 190 and 191 having the same width and each being provided with a rib 190A and 191A at it's end which strengthens the lug and act as a stop as well as limiting rotation in one direction only so as to prevent the mixer from being attached at 180° to the correct alignment. The upper surface of the lugs may have inclined surface parts, not shown, so as to enforce the locking ability by an axial load. Corresponding inclined surface parts, not shown, may also be located on the corresponding surface of the mixer sector shaped bayonet sockets.

The lugs and the cutouts have approximately the same width. Thus the required coding is achieved by other coding means on the mixer and on the cartridge. Therefore the cartridge front 188 is provided with the T-shaped protrusion 151 arranged between the two distanced female outlets and the mixer inlet face is provided with a similar shaped protrusion 152 arranged off center between the mixer inlets. See FIGS. 46 and 47.

The two T-shaped coding means allow the introduction of the mixer in one position only, since the placing of the mixer onto the cartridge is such that, when the two protrusions are laying one upon the other, they will prevent the introduction

5,918,772

13

of the mixer separate male inlets into the cartridge distanced female outlets as well as any contact between the cartridge outlets and the mixer inlets, thus prohibiting cross contamination and mixer/accessory attachment. It is obvious that the coding protrusions can have any shape other than a T-form.

There are situations where the T-shaped coding protrusion give not a 100% protection to warrant no cross-contamination. In the FIGS. 48-58 show several coding protrusions which are believed to warrant that no cross-contamination can occur even if the mixer is introduced onto the cartridge in the wrong sense. To this end the coding protrusions are arranged thus that no tilting around the axis connecting the centers of the two outlets of the cartridge, which could cause this contamination.

The cartridge 210 of FIG. 48 is similar to the cartridge 162 of FIG. 39 and has the same two cylindrical containers with two distanced female outlets 165 and 166 for receiving and sealing over the separate male inlets 157 and 158. The cartridge front 211 is provided with the bayonet means comprising two diametrically opposed sector-shaped bayonet sockets 169 and 170 acting as bayonet prongs for the bayonet lugs of the mixer, the two sockets having different widths, socket 169 having the greater width. The two cutouts 171 and 172 between the sockets allow for the introduction of the corresponding mixer bayonet lugs 160 and 161 into the sector shaped bayonet sockets 169, 170. As shown in this Figure, the passages of the bayonet sockets 169 and 170 commence as straight passages but become curved from the mid point onwards so as to achieve a greater strength against bayonet lug axial forces.

In addition to the cartridge of FIG. 39, the front of this cartridge 210 is provided with a coding protrusions 212, consisting of two pins 213 arranged symmetrically to the axis connecting the centers of the outlets but asymmetrically as regards the transversal middle axis, e.g., on the side of one outlet.

FIG. 49 shows a mixer 214 similar to the mixer 155 of FIG. 38 with a mixer housing 156, outlet 4 and integral internal mixer parts comprising two separate inlets 157 and 158 followed by separated chambers 157A and 158A, which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 156 about the integral internal mixer parts. The mixer element group 3 or part thereof, may also be prealigned and fixedly assembled within the mixer housing.

The mixer housing 156 is provided with longitudinal ribs 8, which end at the larger diameter 159, the two lateral ends of which are formed as bayonet lugs 160 and 161 cooperating with the sector shaped bayonet retaining means of the cartridge. This mixer 214 can also have two enlargement, e.g., one 159 at the inlet, lodging and sealing against the separate inlets 157, 158, followed by the second part 159A having an intermediate diameter and lodging and sealing against the separating means 157A, 158A. The bayonet lugs have the same widths but the gaps or cut outs 194, 195 between them are different, corresponding to the different widths of the sector shaped bayonet sockets on the cartridge, and have also ribs.

In addition to the mixer of FIG. 38, the inlet part of this mixer 214 is provided with the same coding protrusions 215 as those of the cartridge, consisting of two pins 216 and arranged in accordance to the pins 213 of the cartridge such that the mixer can only be introduced the correct way with regard to the other coding means without the possibility of tilting if introduced by force the wrong way.

14

The FIGS. 51-58 show further arrangement and forms of coding protrusions 212, 215, whereby the cartridge as well as the mixer are always the same as in FIGS. 48-50 and only the coding protrusions are provided with numerals, the other parts being the same.

FIGS. 51 and 52 show a coding protrusions 212 on the cartridge front consisting of two bars 217 arranged symmetrically to the transversal middle axis of the cartridge but asymmetrically to the axis connecting the centers of the outlets. The two bars 218 of the mixer inlet part are arranged in accordance to those of the cartridge such that introduction and attachment of the mixer onto the cartridge is only possible in one position.

FIGS. 53 and 54 show a coding protrusions 212 on the cartridge front consisting of two D-shaped protrusion 219 arranged symmetrically to the transversal middle axis of the cartridge but asymmetrically to the axis connecting the centers of the outlets, with both flat sides looking in one direction. The two D-shaped protrusions 220 of the mixer inlet part are arranged in accordance to those of the cartridge such that introduction and attachment of the mixer onto the cartridge is only possible in one position.

FIGS. 55 and 56 show a coding protrusions 212 on the cartridge front consisting of a male plug 221 and a female plug 222 arranged symmetrically. The male plug 223 and the female plug 224 of the mixer inlet part are arranged in accordance to those of the cartridge such that introduction and attachment of the mixer onto the cartridge is only possible in one position.

FIGS. 57 and 58 show a particularly effective coding protrusions 212 on the cartridge front consisting of a bar 225 on one side of the axis connecting the centers of the outlets and two spaced bars 226 on the other side of this axis, arranged symmetrically to the transversal middle axis of the cartridge. The single bar 227 and the double bar 228 of the mixer inlet part are arranged in accordance to those of the cartridge such that introduction and attachment of the mixer onto the cartridge is only possible in one position.

All these coding protrusions prevent efficiently tilting of the mixer during attachment to the cartridge and hence cross-contamination.

The coded alignment can be facilitated by visual coding means, e.g., the marking 153 at the cartridge, opposite the protrusion and the marking 154 at the lug of the mixer near the coding protrusion.

It follows from the embodiment according to FIGS. 32-34 that the mixer inlets and the cartridge outlets may be either female or male respectively and it follows also that it is possible to provide the mixer with one female and one male inlet fitting over/into the corresponding male/female outlet of the cartridge.

This latter arrangement provides for a further coding means since only one position is possible for matching the mixer or closure means to the cartridge. This mixed arrangement of coding and coding means is independent from the manner of attachment with a coupling ring, locking ring or rotatable mixer housing.

While the different widths of the bayonet lugs provide for a distinct coding means, it might be advantageous to enhance this effect by visualisation of the coding by optical means such as different colors, a notch and a marking or by providing one lug of the accessory with a cutout and the corresponding nose at the cartridge bayonet means. This can be done either for visual marking one of the coding parts or for the coding itself.

Cartridges separated with one single wall, e.g., according to U.S. Pat. No. 5,333,760, cannot exclude chemical migra-

5,918,772

15

tion through such a single wall separation barrier and therefore separation at the cartridge outlets is not sufficient to prevent migration and therefore a reaction within the cylinders during storage.

It follows in particular from the FIGS. 5, 14, 26, 29, 32, 35, 38 and 41 that it is advantageous to provide for a single piece cartridge consisting of two complete, preferably cylindrical containers which are substantially separated by an air gap L in between, see e.g. FIG. 32. This assures a total chemical separation along the whole length where the chemicals are contained, ahead of the cylinder pistons, all the way to the top of the outlets where, during storage, a closure means is installed. During dispensing, this separation is further maintained within the mixer up to the first dividing element 3D of the mixer element group.

The invention however, is not limited to air gap separated containers and applies as well to cartridges with containers separated by one single wall according to FIG. 3.

It follows from the above description that the inventive cartridge to accessory attachment combination provides in particular for cartridge containers separated by an air gap up to and including the individual outlets and for a port to port coded alignment for same or dissimilar size ports, with no cross-contamination caused by rotation or random attachment, while maintaining separation past the interface and well into the mixer, so as to hinder the spreading of any possible reaction and plugging of the components at the interface and back into the cartridge outlets. This combination also provides optimization of the mixing performance especially, but not uniquely, for ratios other than 1:1.

While the foregoing description and the drawing of the cartridge embodiments pertained to multiple component cartridges with side-by-side containers the teaching of the present invention is not limited thereto and can be applied as well to cartridges with concentric containers or otherwise arranged and formed containers.

However, the principle of coded attachment ensures both the correctly aligned connection of a mixer or accessory to cartridge outlets since only one position of the mixer or accessory is possible and, in the case of the re-connection of mixer or closure cap to a cartridge, eliminates the possibility of cross-contamination.

Furthermore, and in respect to mixers, all the above described embodiments have the advantage of comprising the minimum number of parts and of being compact, resulting in low molding and assembly costs since the whole inlet section comprising the separating means and the mixer element group is made in one piece. Also the integral construction of this internal part ensures proper alignment thus providing optimum mixing efficiency.

In the case of the first embodiment according to FIG. 1 when a relatively long mixer element group is used and where rotational friction between this mixer element group and the mixer housing, might cause problems, it may be preferable to separate a part or the whole of the mixer element group from the separating means of the inlet section such that a part or the whole of the mixer element group may be fixedly assembled within the housing and therefore it rotates with the housing while connecting the mixer to the cartridge.

In this case—and as seen from the mixer inlet to the mixer outlet—the leading edge of the first element of the mixer element group, or of a portion thereof, must be fixedly assembled within the housing in a pre-aligned position. Therefore, after rotating the housing so as to attach the mixer to the cartridge, correct alignment of the elements is

16

achieved such that each of the two material streams leaving the separating means, or the first element group attached to the separating means, will be evenly divided by the leading edge of the first element of the element group, or portion thereof attached to the housing, for optimum mixing efficiency.

It is evident that instead of cylindrical inlets and outlets, D-shaped or differently shaped similar or dissimilar sized inlets and outlets are possible. Furthermore, the same principle can also be used for a dispensing device, or cartridge, for more than two components.

We claim:

1. A mixer for a cartridge, the cartridge having a plurality of chambers each having an outlet, the mixer comprising:

a housing;

a mixer element disposed in said housing;

a plurality of inlets for engagement with the outlets of the cartridge and mounted on said housing; and

a bayonet coupling on said housing for detachably connecting said mixer to the multichamber cartridge, said bayonet coupling having locked and unlocked positions;

said inlets being fixedly disposed relative to said housing so that said housing is disposed in the same position relative to the cartridge when said bayonet coupling is in either said locked position or said unlocked position.

2. A mixer according to claim 1, wherein said bayonet coupling comprises a pair of diametrically opposed lugs.

3. A mixer according to claim 2, wherein said lugs are fixed relative to said housing.

4. A mixer according to claim 3, wherein one of said lugs is larger than the other lug.

5. A mixer according to claim 1, wherein said bayonet coupling comprises a coupling ring connected to one end of said housing around said inlets, said coupling ring being rotatable relative to said housing.

6. A mixer according to claim 5, wherein said coupling ring has a pair of diametrically opposed lugs.

7. A mixer according to claim 6, wherein one of said lugs is larger than the other lug.

8. A mixer according to claim 5, wherein said coupling ring has a pair of diametrically opposed cutouts.

9. A mixer according to claim 8, wherein one of said cutouts is larger than the other cutout.

10. A mixer according to claim 8, wherein said coupling ring has a coding comprised of one of a radially extending protrusion or cutout.

11. A mixer for a cartridge, the cartridge having a plurality of chambers each having an outlet, the mixer comprising:

a housing;

a mixer element disposed in said housing;

a plurality of inlets for engagement with the outlets of the cartridge and mounted on said housing;

a bayonet coupling on said housing for detachably connecting said mixer to the multichamber cartridge, said bayonet coupling having locked and unlocked positions; and

a coding element that permits said inlets of said housing to be aligned and connected to the outlets of the cartridge in only one orientation.

12. A mixer according to claim 11, said inlets being fixedly disposed relative to said housing so that said housing is disposed in the same position relative to the cartridge when said bayonet coupling is in either said locked position or said unlocked position.

5,918,772

17

13. A mixer according to claim 11, wherein said bayonet coupling comprises a pair of differently sized diametrically opposed lugs, wherein said coding element comprises said differently sized lugs.

14. A mixer according to claim 13, wherein said lugs are fixed relative to said housing.

15. A mixer according to claim 13, wherein said coding element further includes one of a cutout for protrusion formed on said bayonet coupling.

16. A mixer according to claim 13, wherein said bayonet coupling comprises a coupling ring connected to one end of said housing around said inlets, said coupling ring being rotatable relative to said housing.

17. A mixer according to claim 13, wherein said diametrically opposed lugs are formed on said coupling ring.

18. A mixer according to claim 11, wherein said bayonet connector comprises a coupling ring connected to one end of said housing around said inlets, said coupling ring being rotatable relative to said housing, said coupling ring having a pair of differently sized diametrically opposed cutouts, wherein said coding element comprises said differently sized cutouts.

19. A mixer according to claim 18, wherein said coding element further comprises a radially extending protrusion formed on said coupling ring.

20. A cartridge for a mixer, the mixer having a plurality of inlets, the cartridge comprising:

a plurality of chambers each having an outlet for engagement with the inlets of the mixer;

a bayonet coupling on the cartridge for detachably connecting said cartridge to the mixer, said bayonet coupling having locked and unlocked positions; and

a coding element that permits said outlets of said chambers to be aligned and connected to the respective inlets of the mixer in only one orientation.

21. A cartridge according to claim 20, wherein said bayonet coupling comprises means for maintaining the mixer in the same fixed position relative to the cartridge when said bayonet coupling is in either said locked position or said unlocked position.

22. A cartridge according to claim 21, wherein said bayonet coupling comprises a pair of differently sized diametrically opposed sockets positioned around said outlets, wherein said coding element comprises said differently sized sockets.

23. A cartridge according to claim 20, wherein said bayonet coupling comprises a locking ring rotatably mounted to one end of said chambers around said outlets, said locking ring having a pair of differently sized diametrically opposed cutouts, wherein said coding element comprises said differently sized cutouts.

24. A cartridge according to claim 23, wherein one of said sockets has a radially extending groove, said coding element further comprising said groove.

25. A cartridge according to claim 20, wherein said chambers are differently sized.

26. A cartridge according to claim 20, wherein said outlets are differently sized.

27. A dispensing device comprising a cartridge and a mixer, said cartridge comprising:

a plurality of chambers each having an outlet, and

a first bayonet coupling; and

a said mixer comprising:

a housing with a plurality of inlets corresponding in number to said outlets, each inlet being configured to engage a respective one of said outlets;

18

a mixer element disposed in said housing; and

a second bayonet coupling complementary with said first bayonet coupling of said cartridge, said first bayonet coupling being detachable from said second bayonet coupling and together forming a detachable bayonet assembly, said first and second bayonet couplings having locked and unlocked positions;

said inlets being fixedly disposed relative to said housing so that said housing is disposed in the same position relative to the cartridge when said bayonet coupling is in either said locked position or said unlocked position.

28. A dispensing device according to claim 27, wherein said first bayonet coupling comprises a pair of diametrically opposed sockets and said second bayonet coupling comprises a pair of diametrically opposed lugs complementary to said sockets.

29. A dispensing device according to claim 28, wherein said lugs are fixed relative to said housing.

30. A dispensing device according to claim 27, wherein said first bayonet coupling comprises a locking ring rotatably mounted to one end of said chambers around said outlets, said locking ring having a pair of diametrically opposed cutouts, and said second bayonet coupling comprises a pair of diametrically opposed lugs fixed to said housing and complementary to said cutouts, wherein said locking ring is rotatable between a lock position and an unlock position, said cutouts receiving said lugs in said unlock position and said locking ring being rotatable to said lock position while said housing stays rotationally stationary relative to said cartridge.

31. A dispensing device according to claim 30, wherein said cutouts are differently sized and said lugs are complementarily sized so that said inlets of said mixer are aligned and connected to the respective outlets of said cartridge in only one orientation.

32. A dispensing device according to claim 27, wherein said first bayonet coupling comprises a pair of diametrically opposed cutouts formed at one end of said chambers around said outlets and said second bayonet coupling comprises a coupling ring having a pair of diametrically opposed lugs complementary with said cutouts, said coupling ring being rotatably mounted relative to said housing, wherein said coupling ring is rotatable between a lock position and an unlock position, said cutouts receiving said lugs in said unlock position and said coupling ring being rotatable to said lock position while said housing stays rotationally stationary relative to said cartridge.

33. A dispensing device according to claim 32, wherein said cutouts are differently sized and said lugs are complementarily sized so that said inlets of said mixer are aligned and connected to the respective outlets of said cartridge in only one orientation.

34. A dispensing device according to claim 27, wherein said first bayonet coupling comprises a pair of diametrically opposed sockets formed at one end of said chambers around said outlets and said second bayonet coupling comprises a coupling ring having a pair of diametrically opposed cutouts complementary with said sockets, said coupling ring being rotatably mounted relative to said housing, wherein said coupling ring is rotatable between a lock position and an unlock position, said cutouts receiving said lugs in said unlock position and said coupling ring being rotatable to said lock position while said housing stays rotationally stationary relative to said cartridge.

35. A dispensing device according to claim 34, wherein said cutouts are differently sized and said sockets are complementarily sized so that said inlets of said mixer are

5,918,772

19

aligned and connected to the respective outlets of said cartridge in only one orientation.

36. A dispensing device according to claim 34, wherein the coupling ring has a coding comprised of one of a radially extending protrusion or cutout.

37. A dispensing device according to claim 27, wherein said chambers are differently sized.

38. A dispensing device according to claim 27, wherein said outlets of said mixer have differently sized diameters and said inlets of said cartridge are sized complementary to said outlets having different diameters.

39. A dispensing device comprising
a cartridge,
a mixer, and
complementary coding elements formed on said cartridge and mixer,

said cartridge comprising:

a plurality of chambers each having an outlet, and
a first bayonet coupling,

said mixer comprising:

a housing with a plurality of inlets corresponding in number to said outlets, each inlet being configured to engage a respective one of said outlets,
a mixer element disposed in said housing, and
a second bayonet coupling complementary with said first bayonet coupling of said cartridge, said first bayonet coupling being detachable from said second bayonet coupling and together forming a detachable bayonet assembly; and

wherein said coding elements permit said inlets of said mixer to be aligned and connected to the respective outlets of said cartridge in only one orientation.

40. A dispensing device according to claim 39, wherein said inlets are fixed relative to said housing so that said housing stays in a fixed position relative to said cartridge while said first and second bayonet couplings are connected together.

41. A dispensing device, according to claim 39, wherein said first bayonet coupling comprises a locking ring rotatably mounted to one end of said chambers around said outlets, said locking ring having a pair of differently sized diametrically opposed cutouts, and said second bayonet coupling comprises a pair of diametrically opposed lugs fixed to said housing and complementary to said cutouts, wherein said locking ring is rotatable between a lock position and an unlock position, said cutouts receiving said lugs in said unlock position and said locking ring being rotatable to said lock position while said housing stays rotationally stationary relative to said cartridge.

20

42. A dispensing device according to claim 39, wherein said first bayonet coupling comprises a pair of differently sized diametrically opposed cutouts formed at one end of said chambers around said outlets and said second bayonet coupling comprises a coupling ring having a pair of diametrically opposed lugs complementary with said cutouts, said coupling ring being rotatably mounted relative to said housing, wherein said coupling ring is rotatable between a lock position and an unlock position, said cutouts receiving said lugs in said unlock position and said coupling ring being rotatable to said lock position while said housing stays rotationally stationary relative to said cartridge.

43. A dispensing device according to claim 39, wherein said first bayonet coupling comprises a pair of differently sized diametrically opposed sockets formed at one end of said chambers around said outlets and said second bayonet coupling comprises a coupling ring having a pair of diametrically opposed cutouts complementary with said sockets, said coupling ring being rotatably mounted relative to said housing, wherein said coupling ring is rotatable between a lock position and an unlock position, said cutouts receiving said lugs in said unlock position and said coupling ring being rotatable to said lock position while said housing stays rotationally stationary relative to said cartridge.

44. A method of forming a dispensing device, comprising the steps of:

providing a cartridge having a plurality of chambers each having an outlet;

providing a mixer comprising a housing with a plurality of inlets corresponding in number to said outlets, each inlet being configured to engage a respective one of said outlets, and a mixer element disposed in said housing;

providing a two-part bayonet coupling assembly, with a first coupling part associated with said housing and a second coupling part complementary with said first coupling part and associated with said cartridge, wherein one of said first and second coupling parts is rotatably mounted respectively to said housing and said cartridge;

aligning the inlets of said mixer to the respective outlets of said cartridge and engaging said inlets to said outlets;

maintaining said inlets fixed relative to said housing so that said housing stays in a fixed position relative to said cartridge while rotating said one rotatably mounted coupling part to lock said mixer to said cartridge.

* * * * *

EXHIBIT F



US006186363B1

(12) **United States Patent**
Keller et al.

(10) Patent No.: **US 6,186,363 B1**
(45) Date of Patent: **Feb. 13, 2001**

- (54) **BAYONET FASTENING DEVICE FOR THE ATTACHMENT OF AN ACCESSORY TO A MULTIPLE COMPONENT CARTRIDGE OR DISPENSING DEVICE**
- (75) Inventors: Wilhelm A. Keller, Obsgartenweg 9, CH-6402 Merlischachen (CH); Richard J. Wilson, Andover, MA (US)
- (73) Assignee: Wilhelm A. Keller, Merlischachen (CH)
- (*) Notice: Under 35 U.S.C. 154(b), the term of this patent shall be extended for 0 days.

(21) Appl. No.: 09/348,038
(22) Filed: Jul. 6, 1999

Related U.S. Application Data

- (63) Continuation of application No. 08/563,109, filed on Nov. 27, 1995, now Pat. No. 5,918,772, which is a continuation-in-part of application No. 08/403,172, filed on Mar. 13, 1995, now abandoned, and a continuation-in-part of application No. 08/522,109, filed on Aug. 31, 1995, now abandoned.

(30) **Foreign Application Priority Data**

Aug. 24, 1995 (EP) 95810531

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(52) U.S. CL 222/145.6; 222/145.5;
222/137
(58) Field of Search 222/145.5, 145.6,
222/567, 326, 327, 136, 137; 283/360,
361, 376, 401, 396, 400, 402, 915

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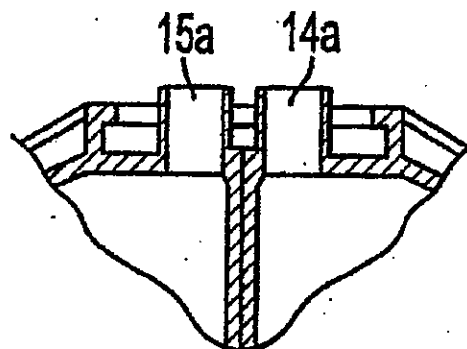
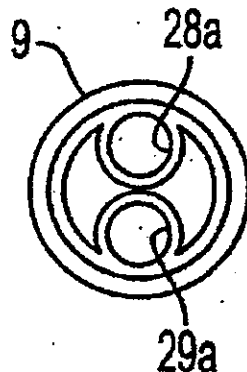
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(57) **ABSTRACT**

A bayonet attachment on a cartridge for attaching a mixer or accessory to a multiple component cartridge is formed as a ring-shaped bayonet socket with two internal recesses and two diametrically opposed cutouts forming one bayonet coupling part, whereas the bayonet attachment of the mixer or accessory comprises two bayonet lugs corresponding to the cutouts. In a preferred embodiment, the respective inlets of the mixer housing or the outlets of the cartridge have different sizes or shapes to provide coded alignment between the cartridge and the mixer.

7 Claims, 30 Drawing Sheets



US 6,186,363 B1

Page 2

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			5,609,271	3/1997	Keller et al.	222/145.6
			5,918,772	7/1999	Keller et al.	222/145.6

U.S. Patent

Feb. 13, 2001

Sheet 1 of 30

US 6,186,363 B1

FIG. 1

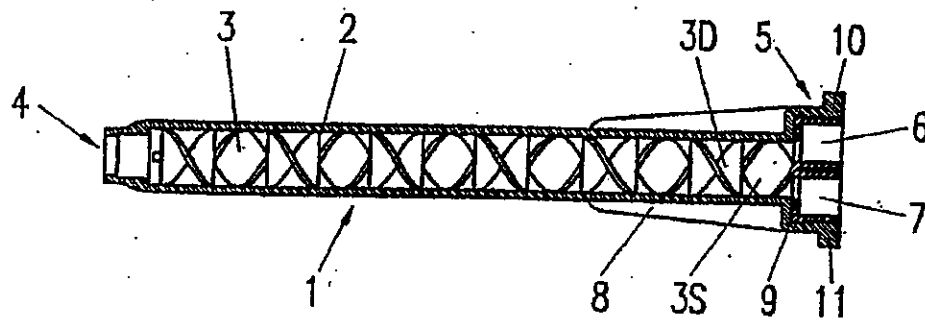
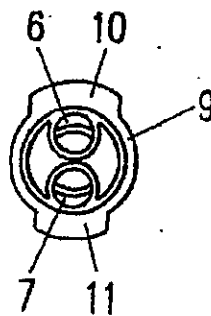


FIG. 2



U.S. Patent

Feb. 13, 2001

Sheet 2 of 30

US 6,186,363 B1

FIG. 3

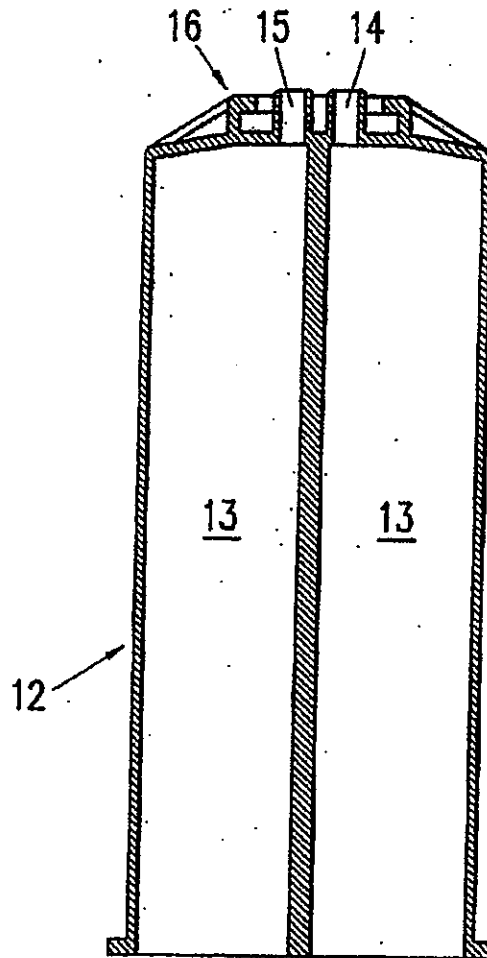
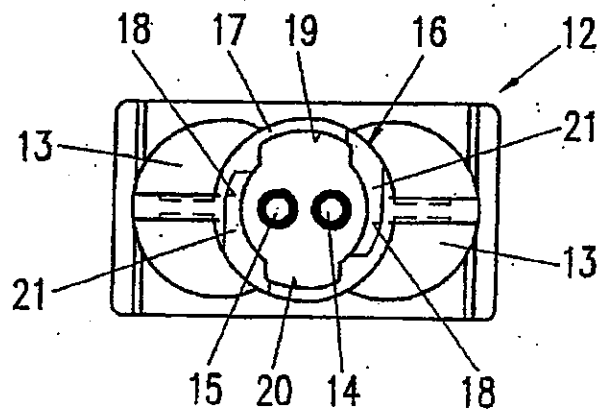


FIG. 4



U.S. Patent

Feb. 13, 2001

Sheet 3 of 30

US 6,186,363 B1

FIG. 5

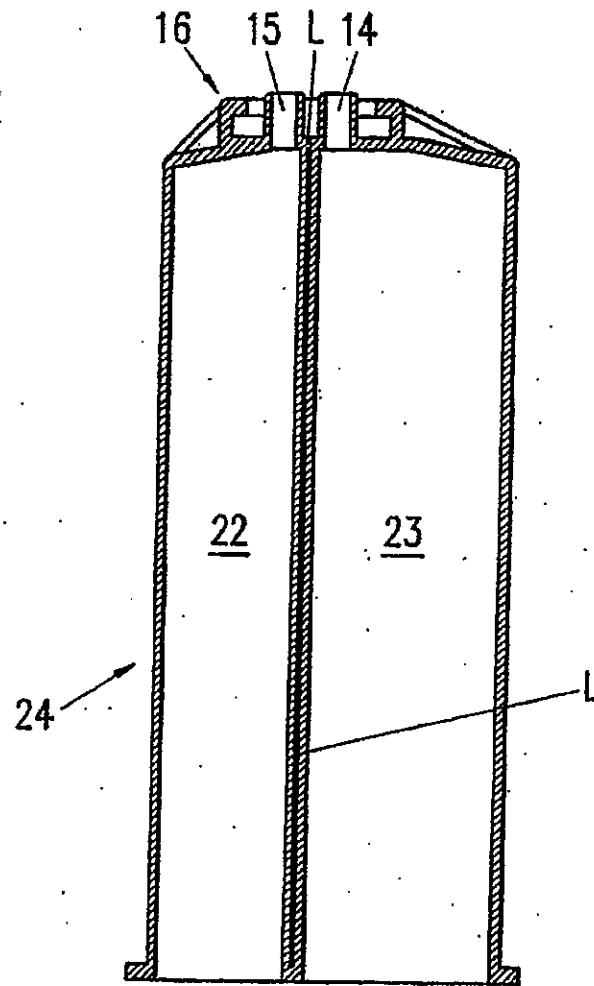
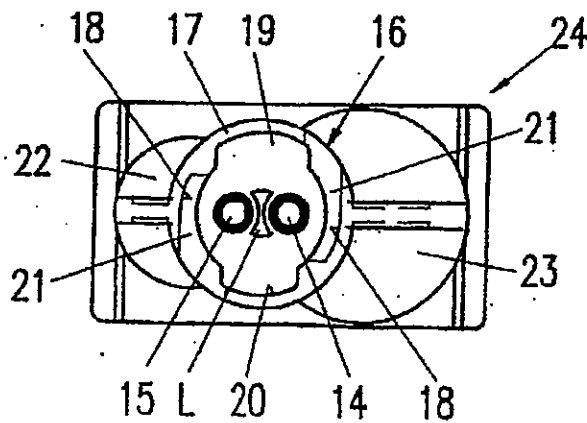


FIG. 6



U.S. Patent

Feb. 13, 2001

Sheet 4 of 30

US 6,186,363 B1

FIG. 7

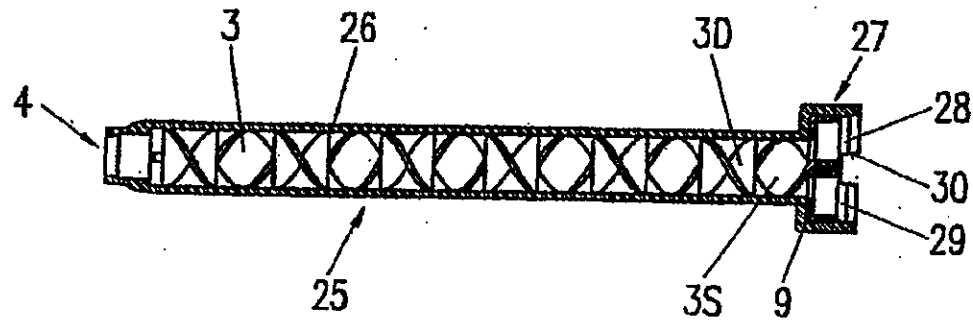
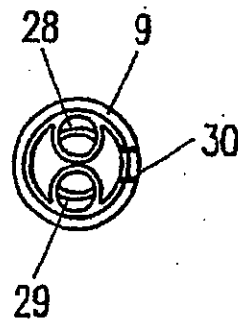


FIG. 8



U.S. Patent

Feb. 13, 2001

Sheet 5 of 30

US 6,186,363 B1

FIG. 8A

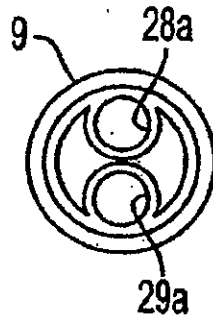
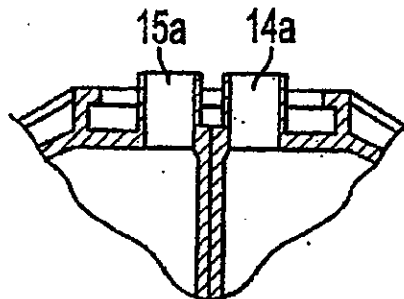


FIG. 9A



U.S. Patent

Feb. 13, 2001

Sheet 6 of 30

US 6,186,363 B1

FIG. 9

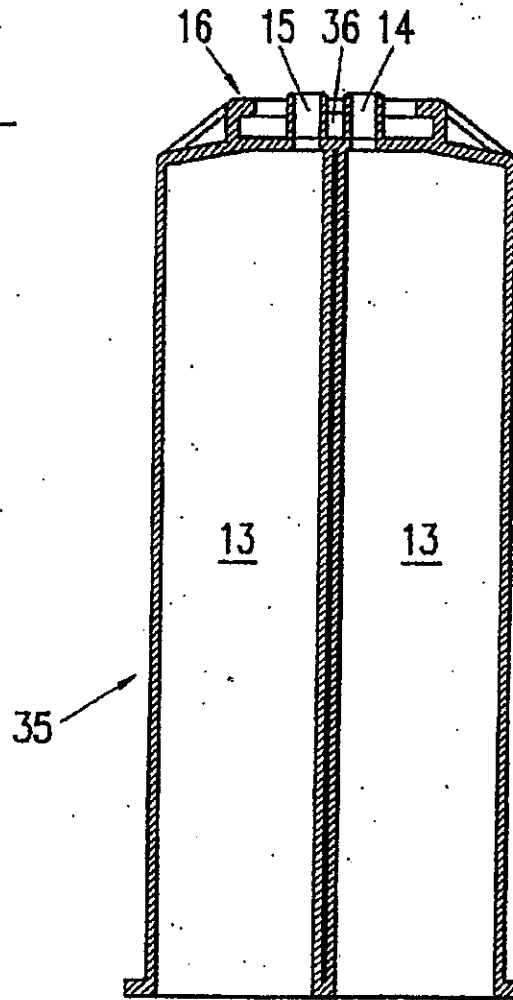
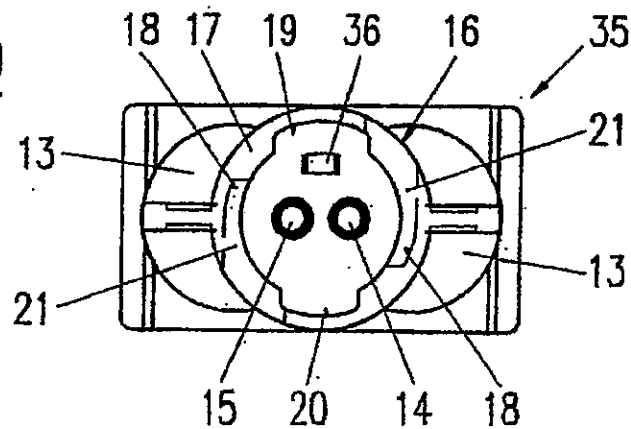


FIG. 10



U.S. Patent

Feb. 13, 2001

Sheet 7 of 30

US 6,186,363 B1

FIG. 11

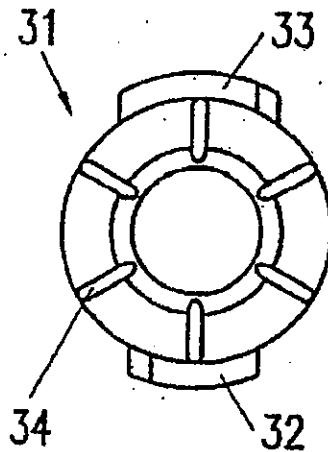
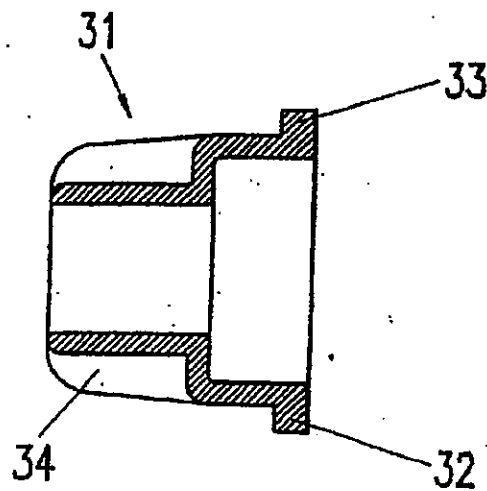


FIG. 12



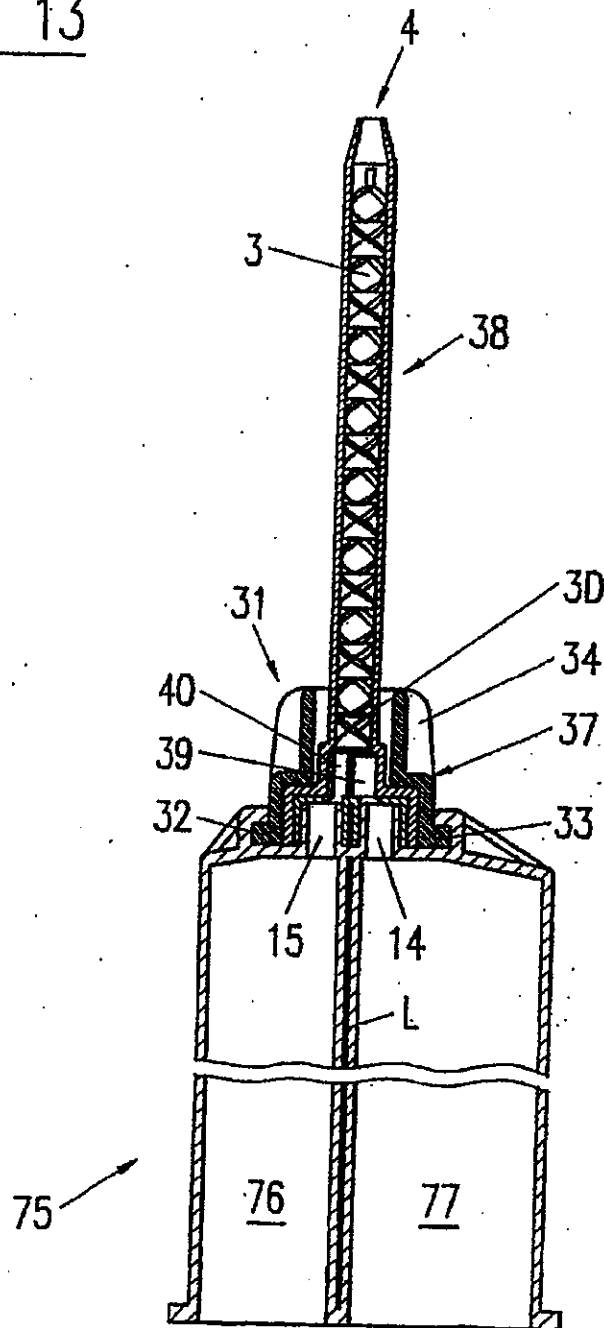
U.S. Patent

Feb. 13, 2001

Sheet 8 of 30

US 6,186,363 B1

FIG. 13



U.S. Patent

Feb. 13, 2001

Sheet 9 of 30

US 6,186,363 B1

FIG. 14

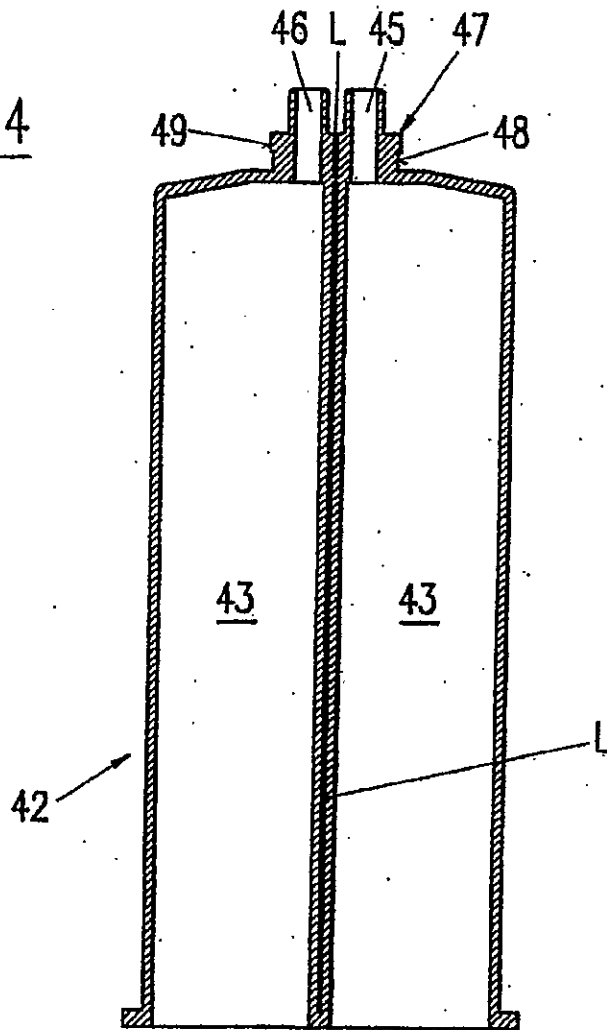


FIG. 15

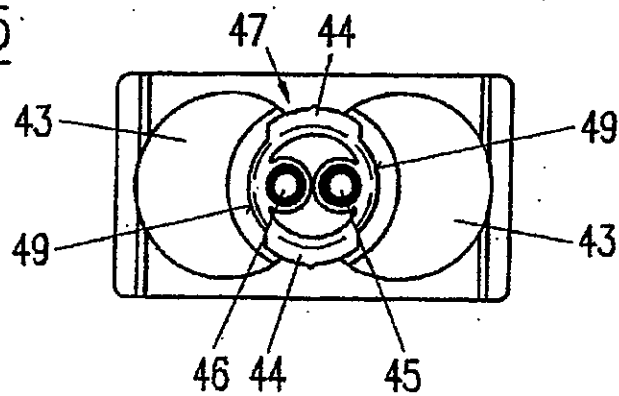


EXHIBIT G

U.S. Patent

Feb. 13, 2001

Sheet 10 of 30

US 6,186,363 B1

FIG. 16A

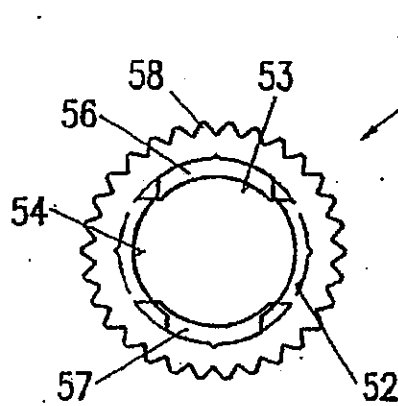


FIG. 16B

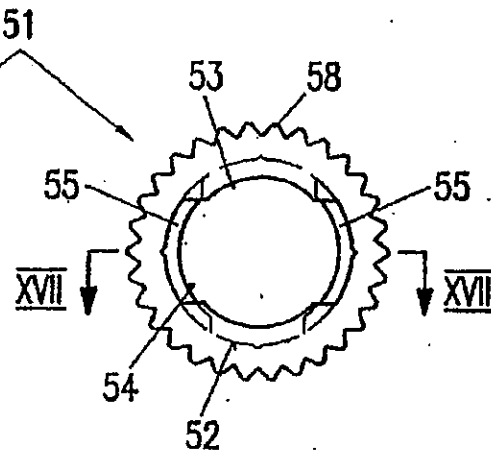
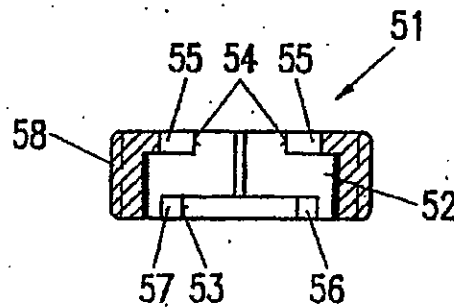


FIG. 17



U.S. Patent

Feb. 13, 2001

Sheet 11 of 30

US 6,186,363 B1

FIG. 18

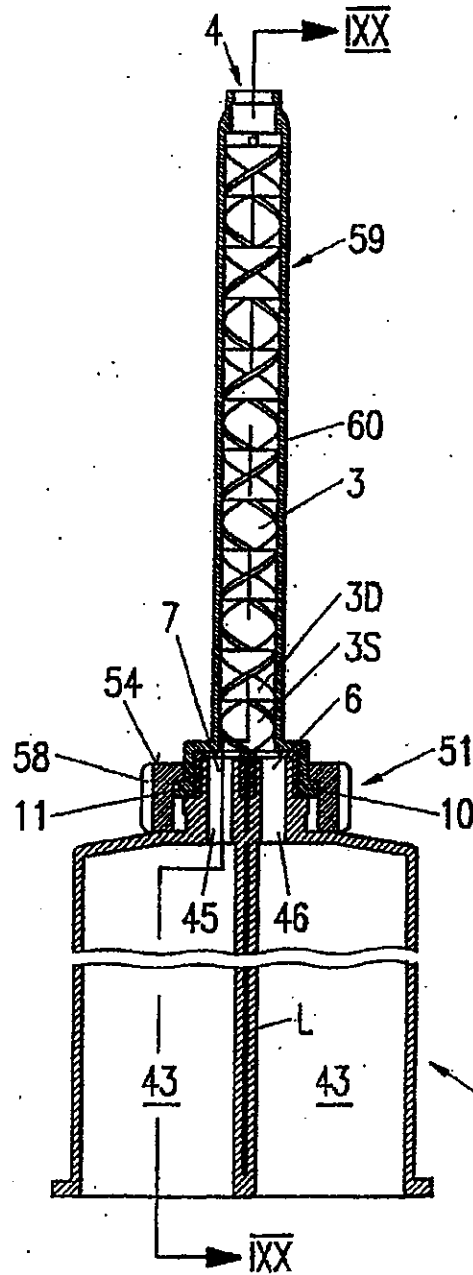
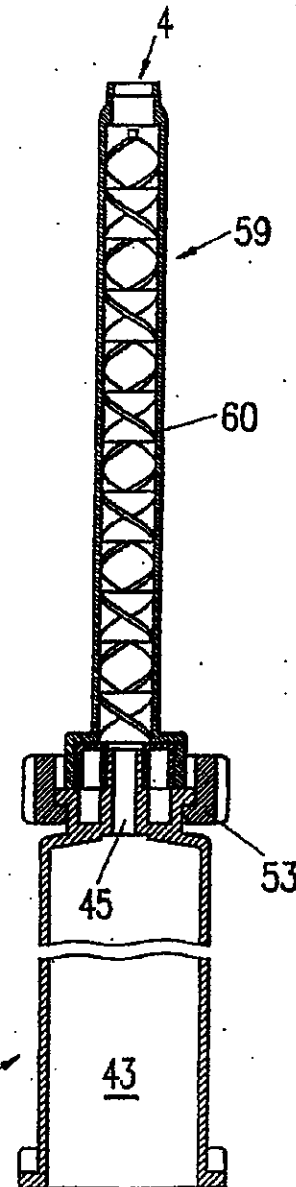


FIG. 19



U.S. Patent

Feb. 13, 2001

Sheet 12 of 30

US 6,186,363 B1

FIG. 20

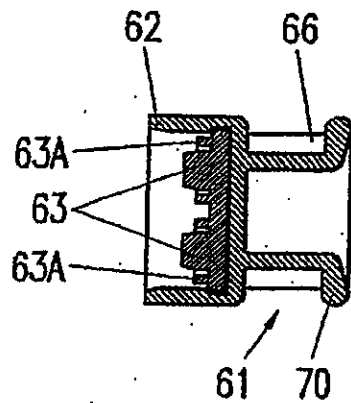


FIG. 21

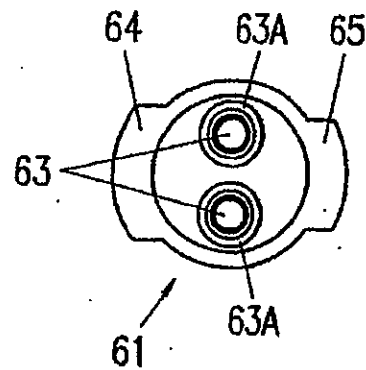


FIG. 22

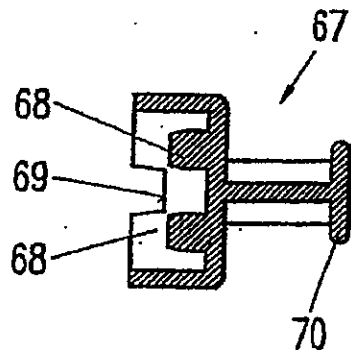
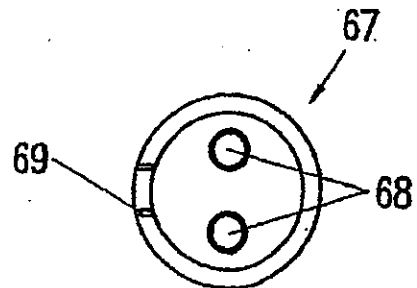


FIG. 23



U.S. Patent

Feb. 13, 2001

Sheet 13 of 30

US 6,186,363 B1

FIG. 24

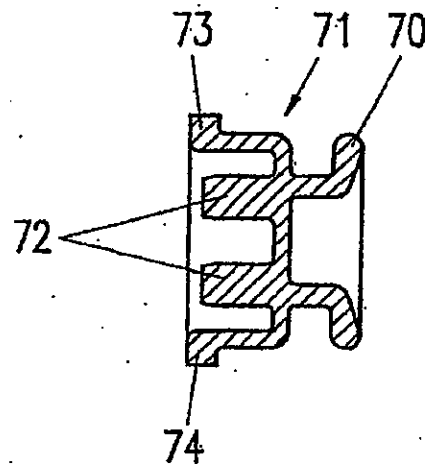
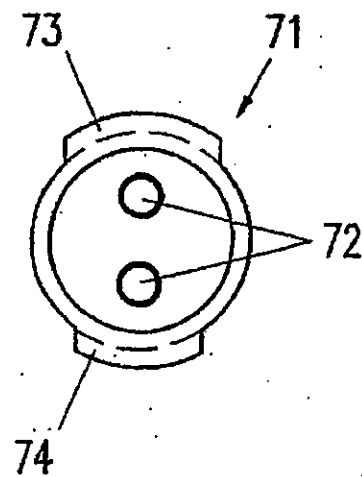


FIG. 25



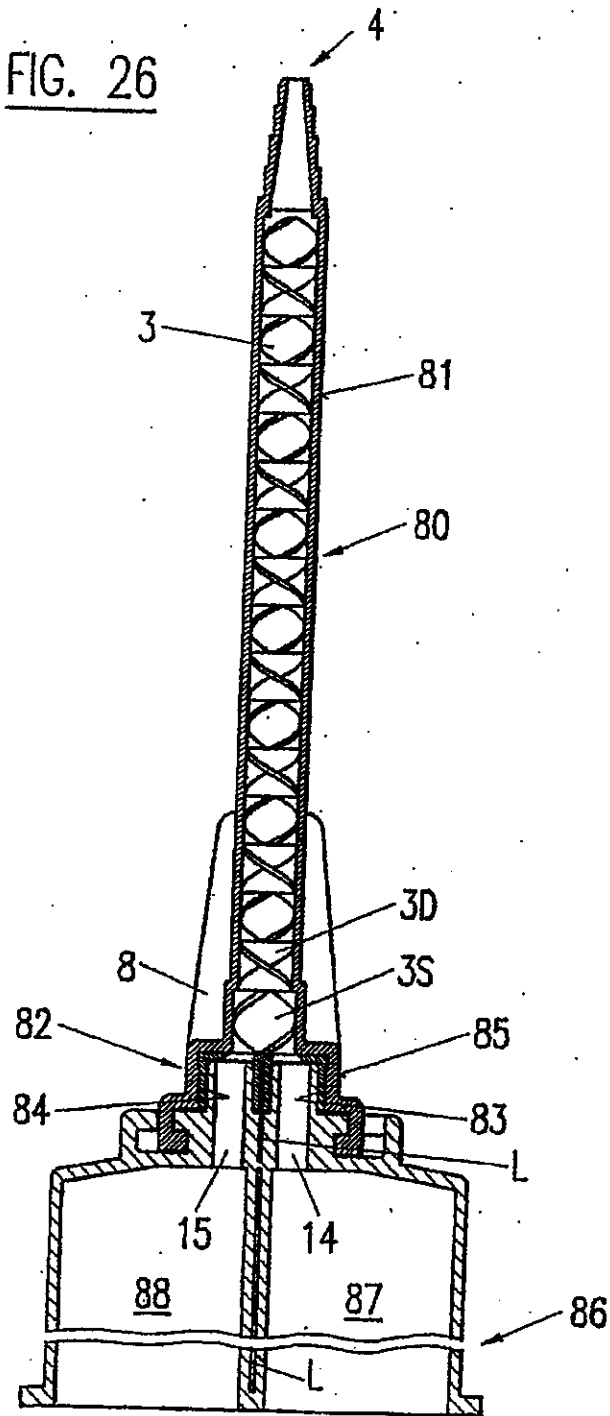
U.S. Patent

Feb. 13, 2001

Sheet 14 of 30

US 6,186,363 B1

FIG. 26



U.S. Patent

Feb. 13, 2001

Sheet 15 of 30

US 6,186,363 B1

FIG. 27

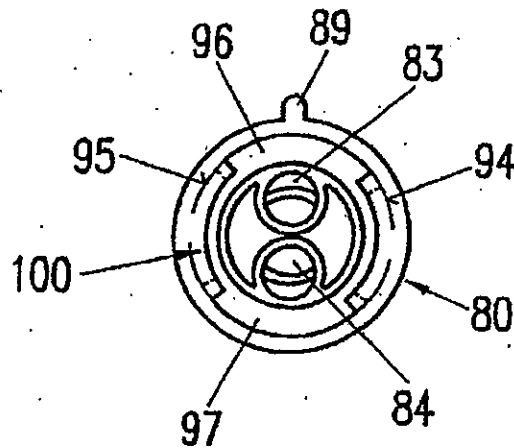
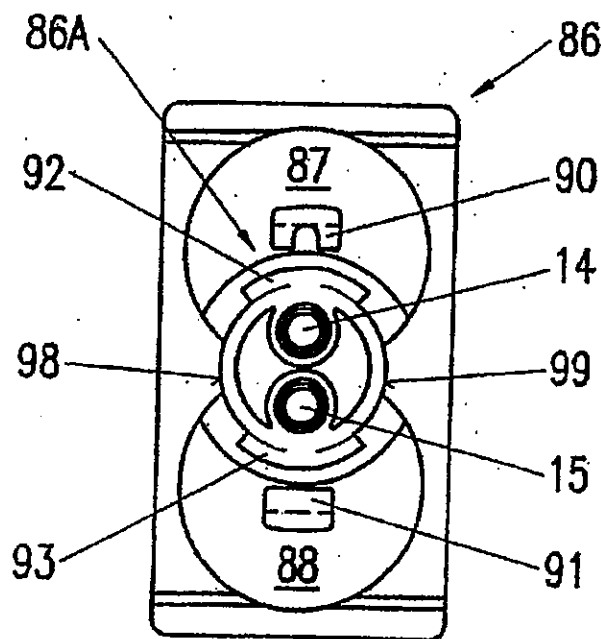


FIG. 28



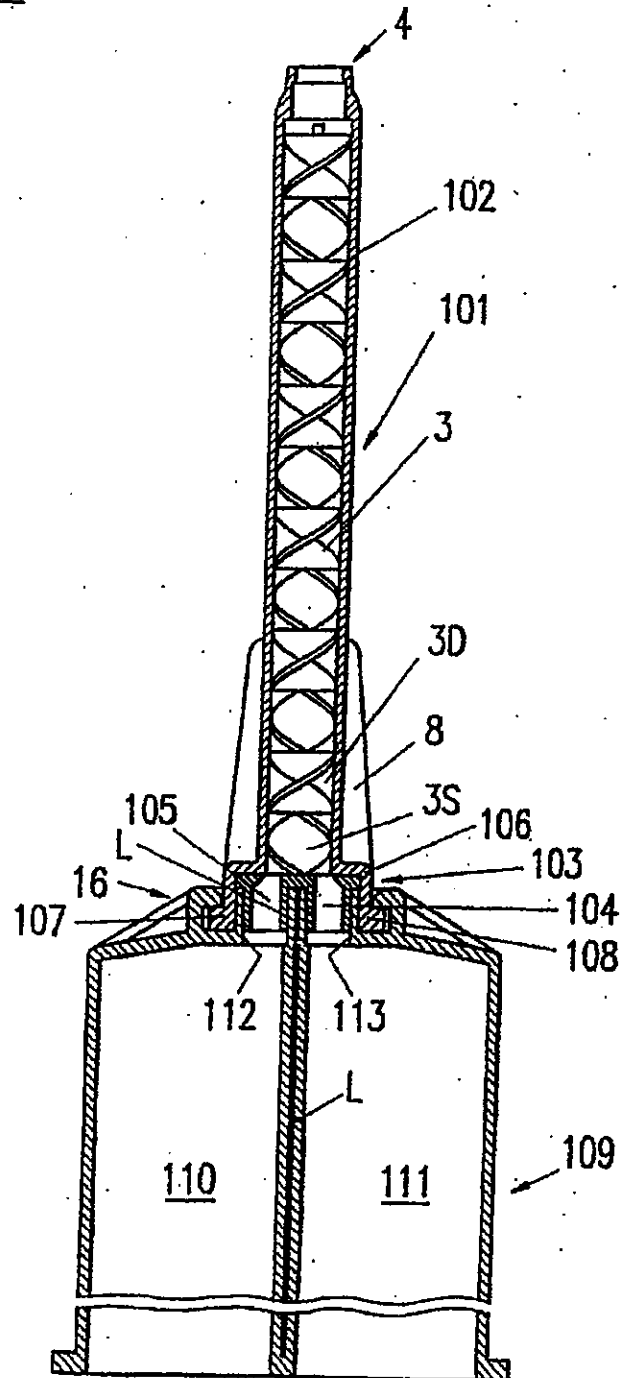
U.S. Patent

Feb. 13, 2001

Sheet 16 of 30

US 6,186,363 B1

FIG. 29



U.S. Patent

Feb. 13, 2001

Sheet 17 of 30

US 6,186,363 B1

FIG. 30

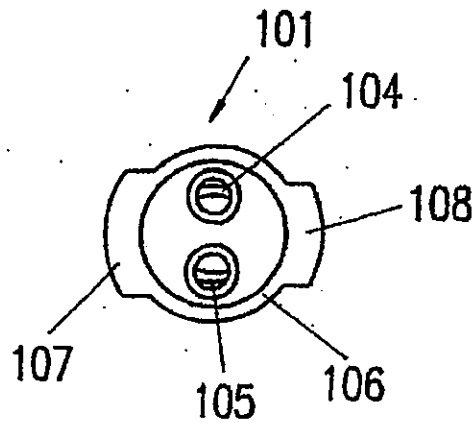
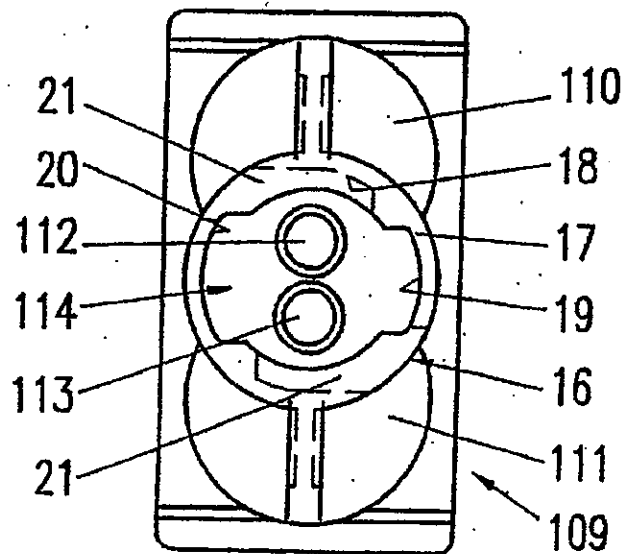


FIG. 31



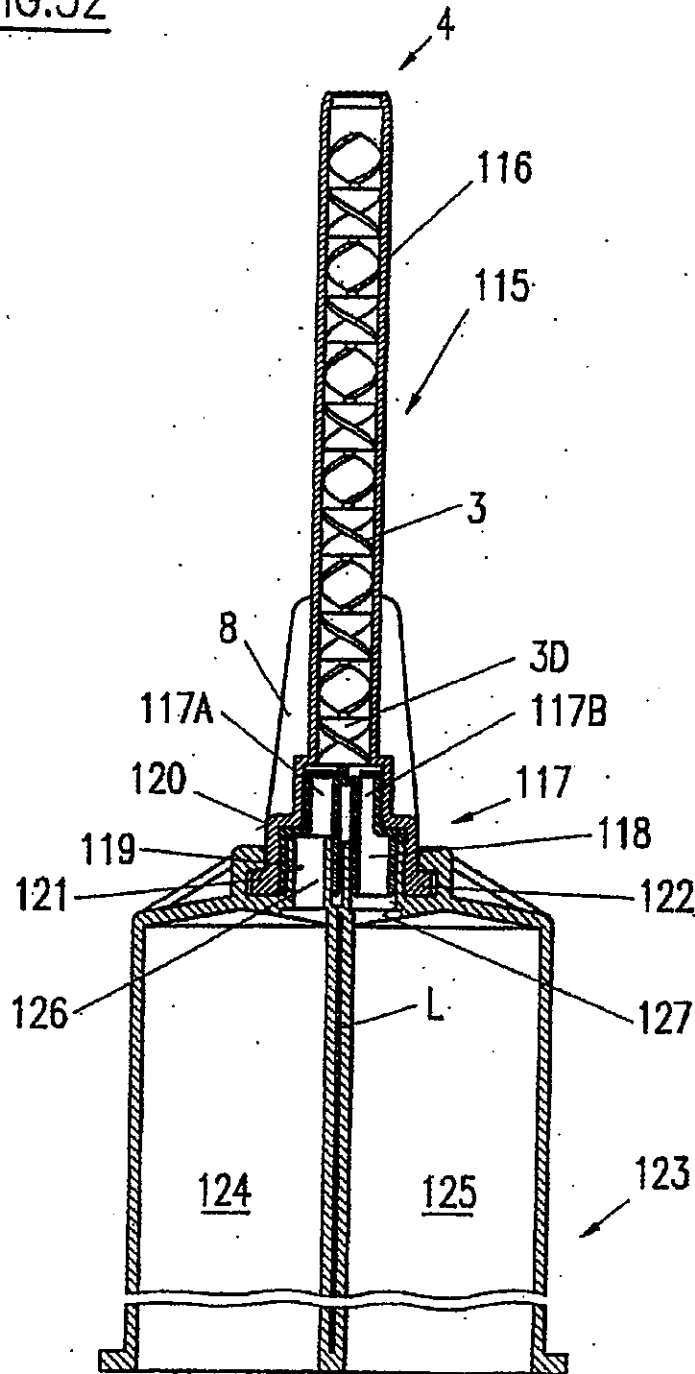
U.S. Patent

Feb. 13, 2001

Sheet 18 of 30

US 6,186,363 B1

FIG.32



U.S. Patent

Feb. 13, 2001

Sheet 19 of 30

US 6,186,363 B1

FIG. 33

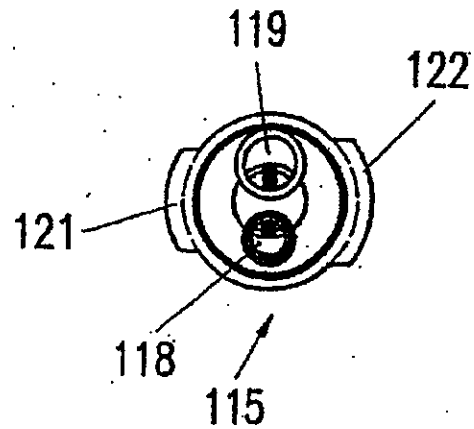
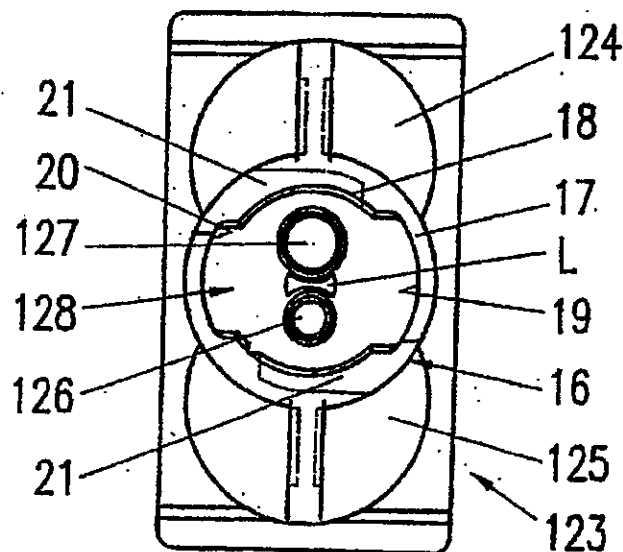


FIG. 34



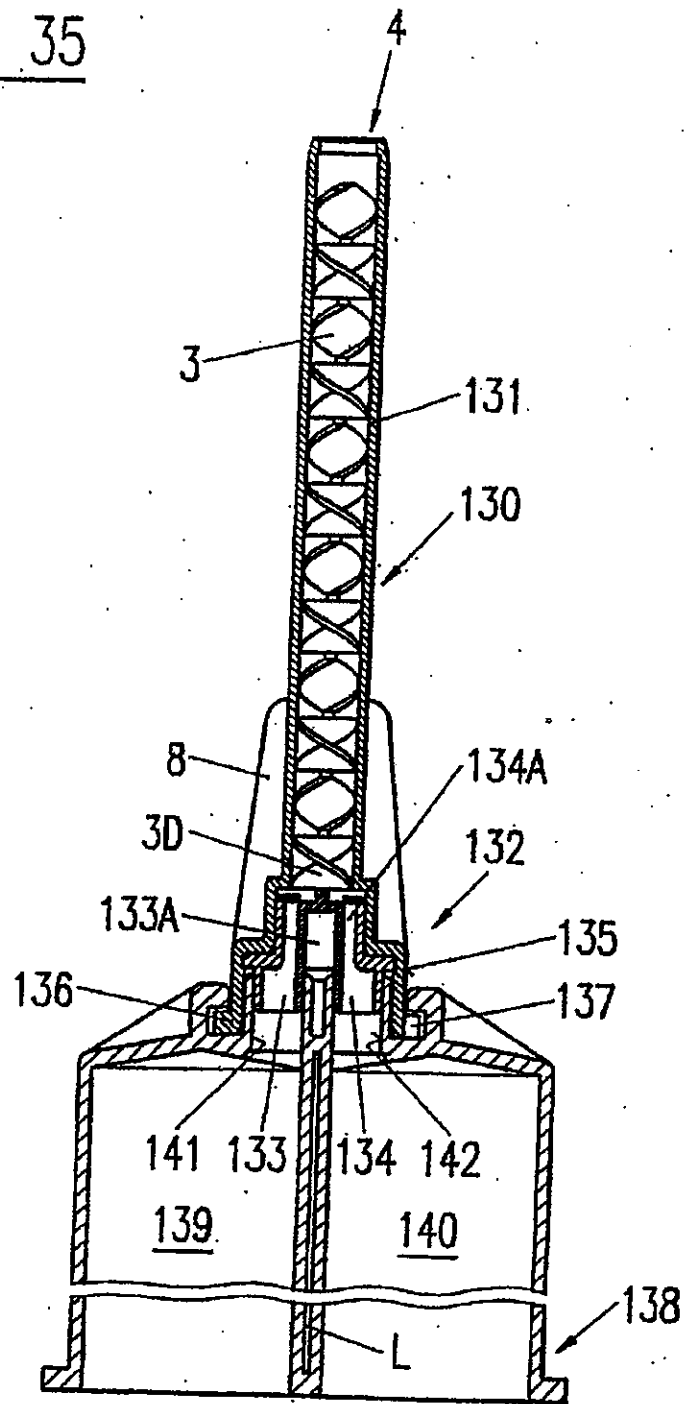
U.S. Patent

Feb. 13, 2001

Sheet 20 of 30

US 6,186,363 B1

FIG. 35



U.S. Patent

Feb. 13, 2001

Sheet 21 of 30

US 6,186,363 B1

FIG. 36

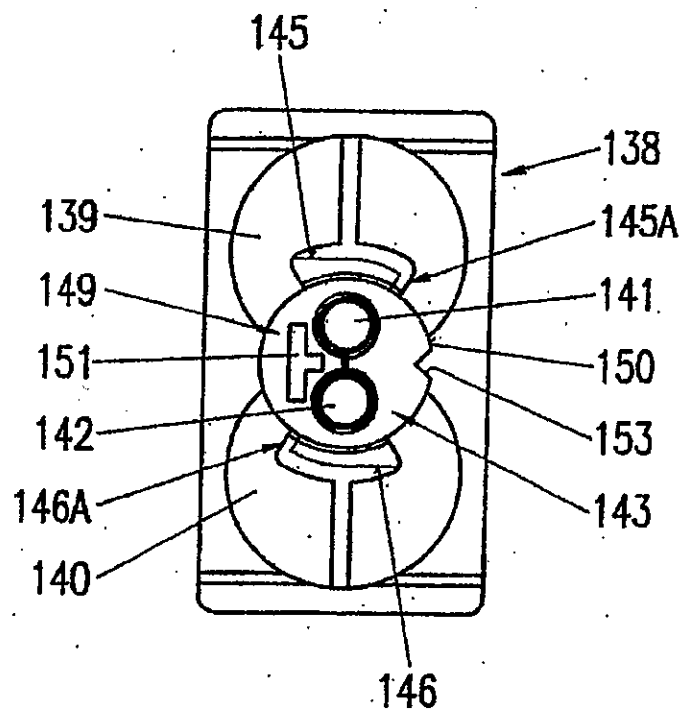
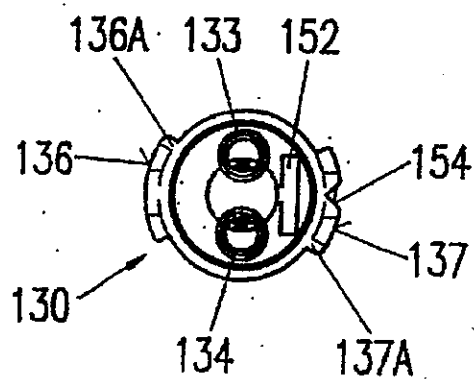


FIG. 37



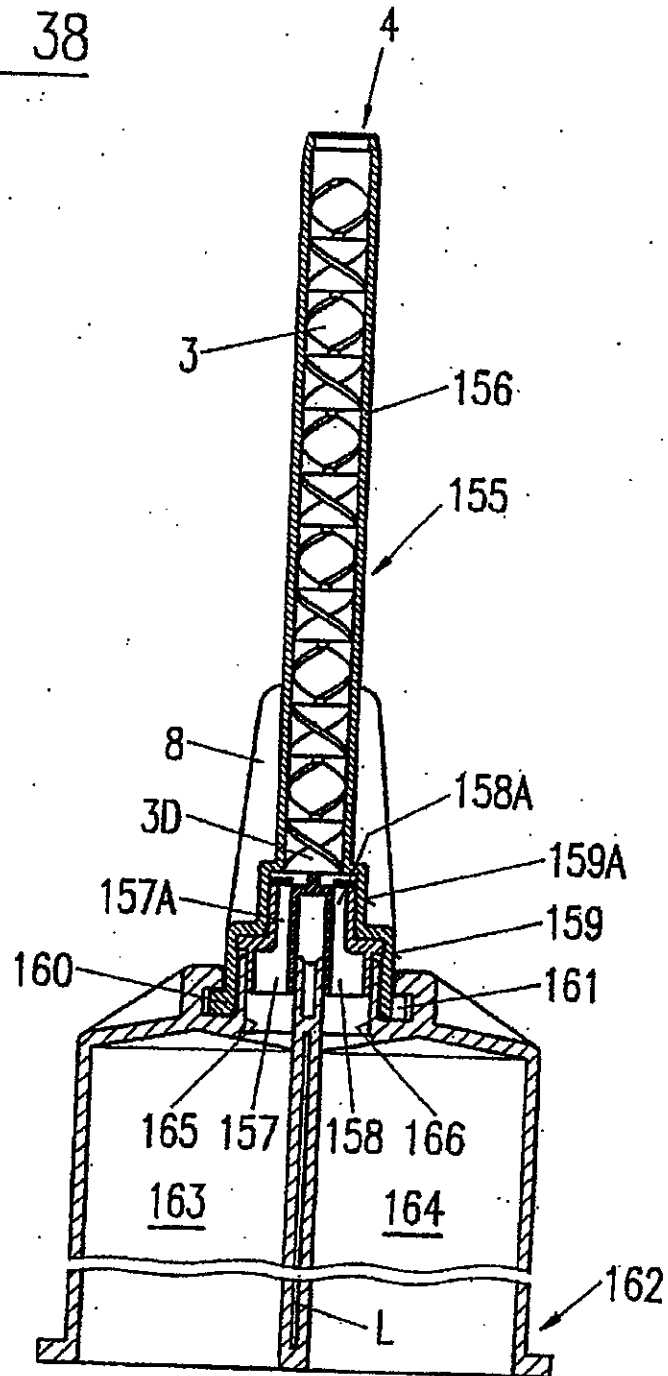
U.S. Patent

Feb. 13, 2001

Sheet 22 of 30

US 6,186,363 B1

FIG. 38



U.S. Patent

Feb. 13, 2001

Sheet 23 of 30

US 6,186,363 B1

FIG. 39

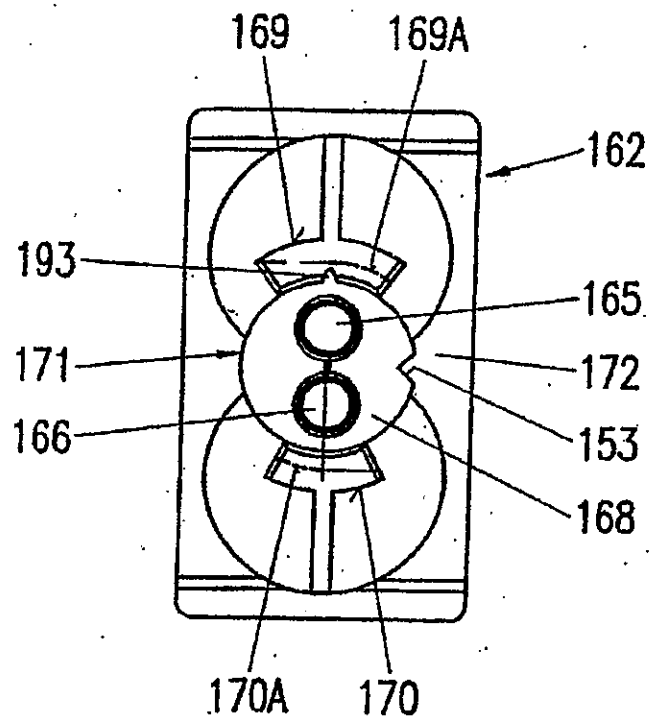


FIG. 40

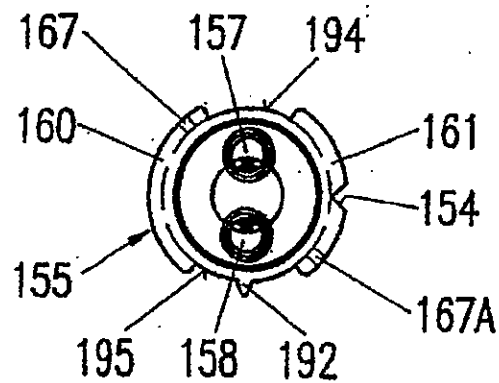


EXHIBIT G

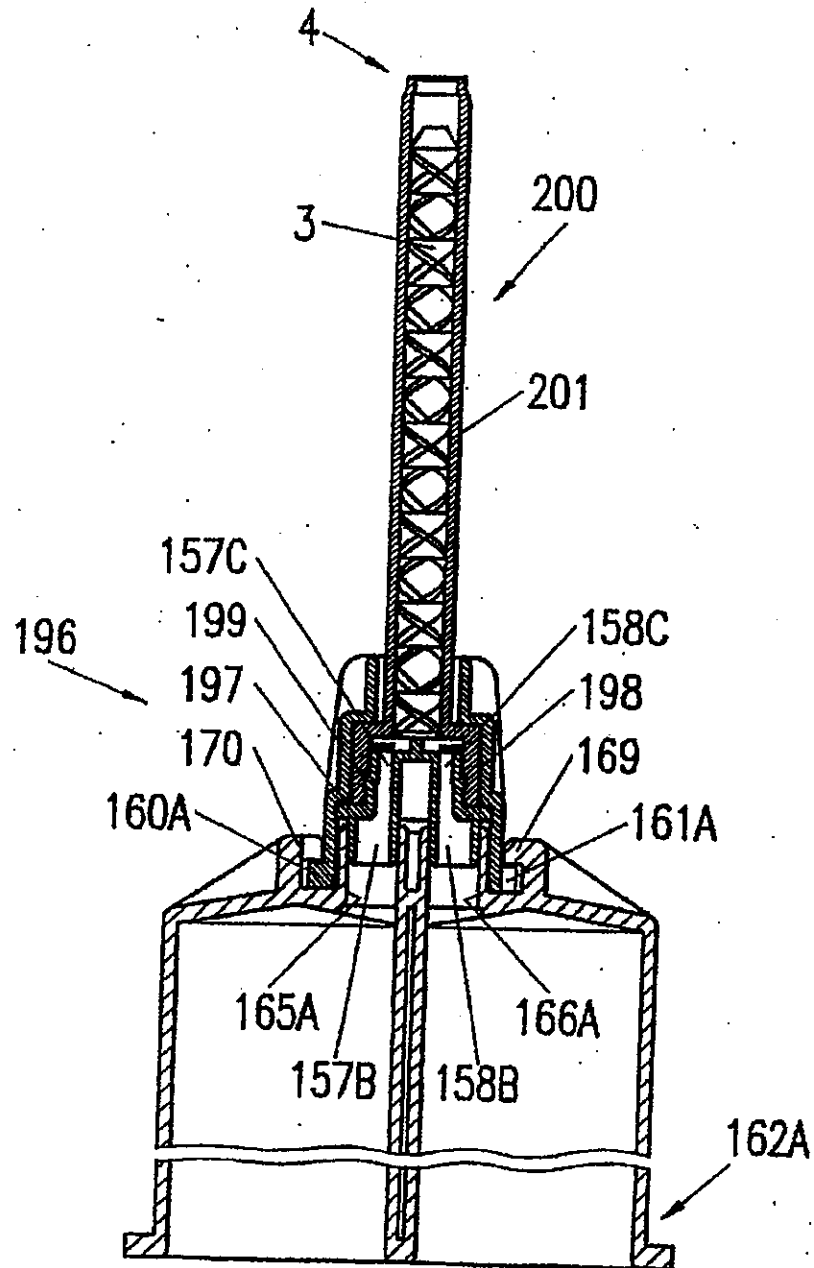
U.S. Patent

Feb. 13, 2001

Sheet 25 of 30

US 6,186,363 B1

FIG. 44



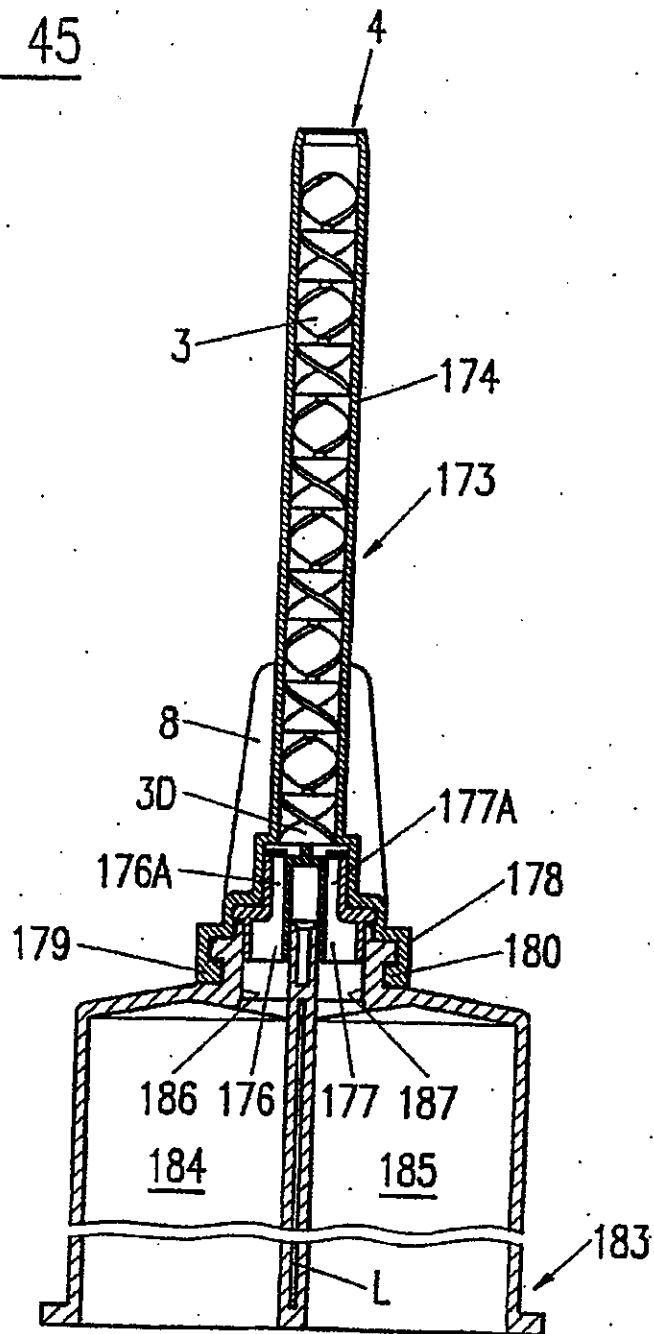
U.S. Patent

Feb. 13, 2001

Sheet 26 of 30

US 6,186,363 B1

FIG. 45



U.S. Patent

Feb. 13, 2001

Sheet 27 of 30

US 6,186,363 B1

FIG. 46

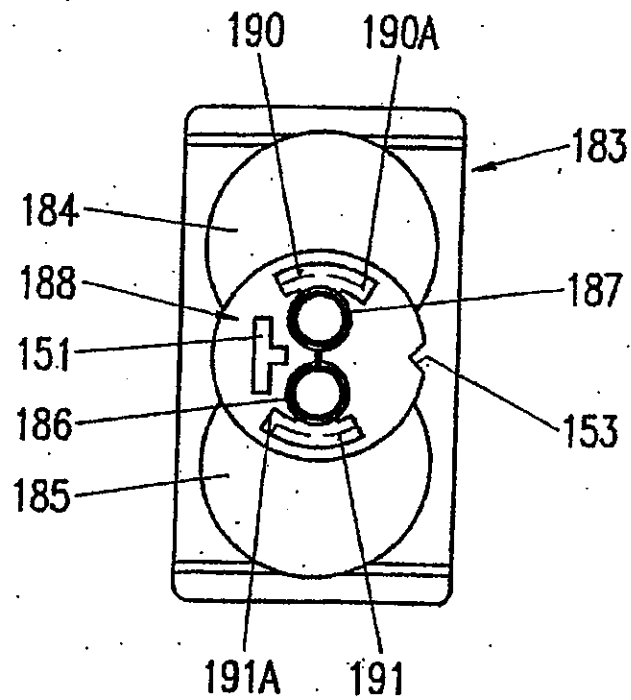
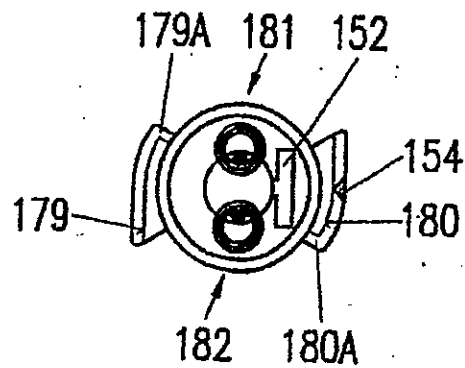


FIG. 47



U.S. Patent

Feb. 13, 2001

Sheet 28 of 30

US 6,186,363 B1

FIG. 48

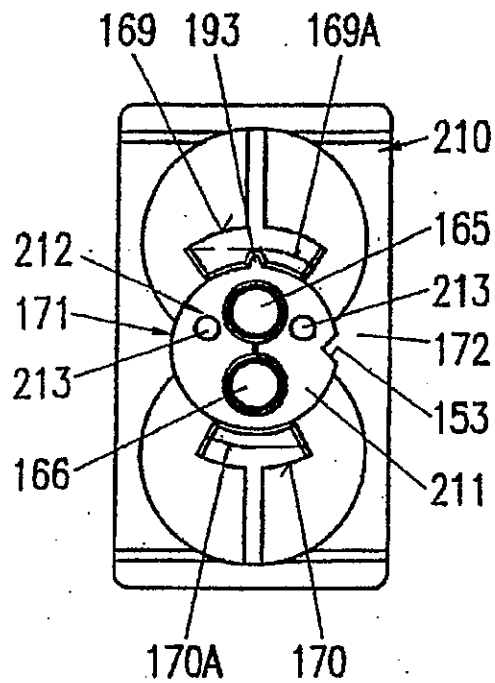


FIG. 50

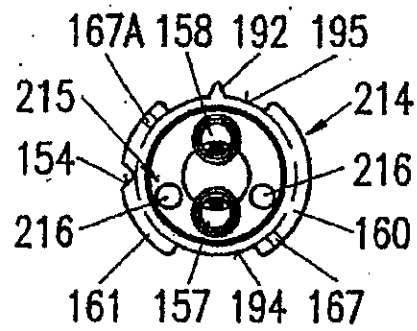
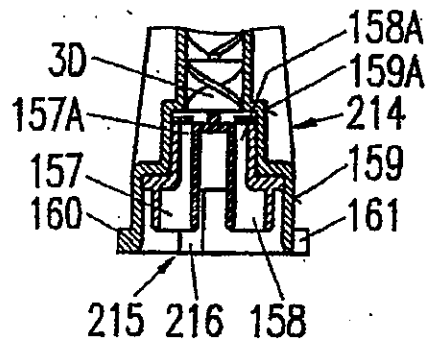


FIG. 49



U.S. Patent

Feb. 13, 2001

Sheet 29 of 30

US 6,186,363 B1

FIG. 51

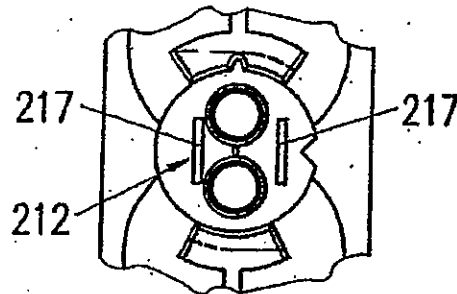


FIG. 52



FIG. 53

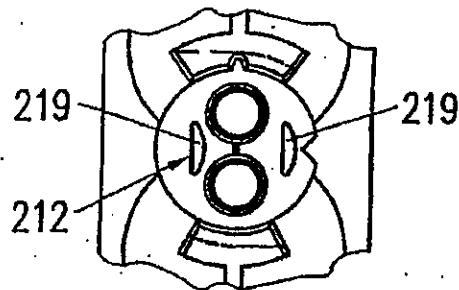


FIG. 54

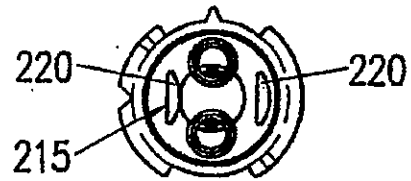


FIG. 55

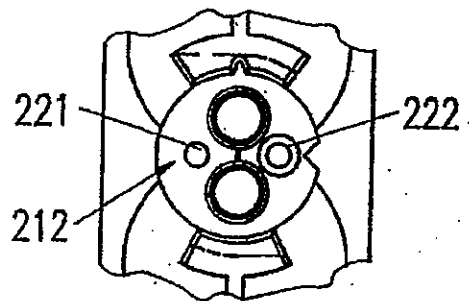
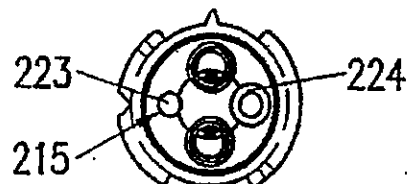


FIG. 56



U.S. Patent

Feb. 13, 2001

Sheet 30 of 30

US 6,186,363 B1

FIG. 57

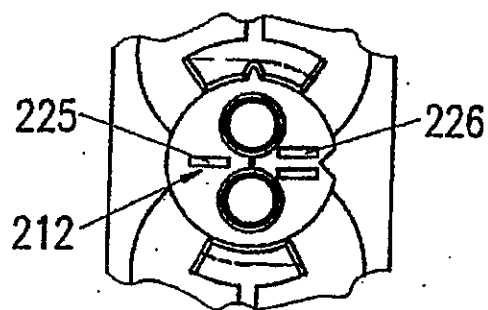
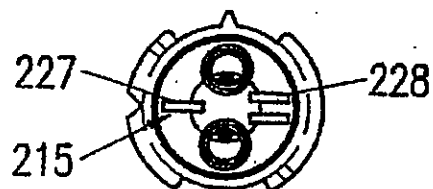


FIG. 58



US 6,186,363 B1

BAYONET FASTENING DEVICE FOR THE ATTACHMENT OF AN ACCESSORY TO A MULTIPLE COMPONENT CARTRIDGE OR DISPENSING DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a continuation of patent application Ser. No. 08/563,109, filed Nov. 27, 1995, now U.S. Pat. No. 5,918,772, which is a continuation in part of patent application Ser. No. 08/403,172 filed Mar. 13, 1995, now abandoned, and a continuation in part of patent application Ser. No. 08/522,109 filed Aug. 31, 1995 now abandoned.

BACKGROUND OF THE INVENTION

The present invention relates to a bayonet fastening device for the attachment of an accessory to a dispensing device, in particular for the attachment of a mixer to a two-component cartridge.

There exists a great number of mixers and cartridges having means for attaching the mixer to the cartridge for example, U.S. Pat. Nos. 4,767,026 and 4,538,920 disclose on mixer that has two bayonet locking lugs inserted into corresponding prongs on the cartridge by rotation. On one hand, the rotary locking movement of the complete mixer will cause contamination of one chemical component against the other chemical component at the interface between the cartridge and the mixer, in that these components will be transported from one outlet to the other outlet, from one inlet to the other inlet, causing an undesired reaction between these chemical components at the interface between cartridge and mixer or closure means, and eventually carrying such a reaction back into the cartridge outlets, thus causing plugging of the outlets. On the other hand there exist situations where it is necessary to connect and attach the mixer or accessory to a multiple component cartridge or dispensing device in a predetermined position, such as when cartridge outlets or mixer inlets are of a different size for different relative mixing ratios or when mixers or accessories are refitted for reuse.

There exists a need to connect and attach a mixer or accessory to a multiple component cartridge or dispensing device in a predetermined orientation, such as when cartridge outlets or mixer inlets are of a different size for different relative mixing ratios or when special high ratio mixers are used for greater mixing efficiency and when mixers or accessories are refitted for reuse. In the latter case of reuse, it is necessary to avoid any possibility of cross contamination of one chemical component against another during refitting. Such cross contamination of reactive chemical systems can cause plugging at the cartridge outlets and cause a reaction back into and within the cartridge.

U.S. Pat. No. 5,228,599 discloses a multiple dispensing cartridge having a mixer attached thereto with the aid of a coupling nut having an internal thread, wherein each storage cylinder ends in a dispensing opening which forms a side by side outlet, whereas the inlet of the mixer is not defined. The mixer is put on the cartridge and secured by a coupling nut via an external thread at the cartridge.

Another cross contamination situation can occur when a clean mixer or accessory inlet area or closure plugs are able to make any form of incorrect alignment contact, such as by angular tipping, with the chemical components at the cartridge outlet area during the process of initial placing of the mixer or closure plugs against the cartridge in preparation for attachment. In that case, when fitting the same mixer or

closure plugs in the correct position, it is possible to now chemically contaminate the outlets of the cartridge. Again, this can cause plugging and a reaction back into and within the cartridge.

Additionally, it is commonly found in bayonet attachment means of the prior art that the bayonet prongs of the cartridge are relatively small and therefore of limited structural rigidity and strength. This allows the possibility of distortion and is of greater significance due to the trend towards smaller mixer diameters and therefore high backpressures, the result being leakage at the mixer to cartridge sealing interface during dispensing.

SUMMARY OF THE INVENTION

On the basis of this prior art, it is an object of the present invention to provide for a bayonet attachment device for attaching a mixer, or closure means or any other accessory, such as an adapter or a connecting tube to a multiple component dispensing device, in particular a two component cartridge, which has improved strength and structural rigidity against stress caused by greater hydraulic forces due to the trend towards smaller mixer diameters as well as providing improved interface sealing.

This object is attained with a device wherein said bayonet attachment means at the dispensing apparatus or cartridge is formed as ring-shaped bayonet socket, with at least two internal recesses or an inner circular groove with at least two bayonet cutout followed by adjacent bayonet retaining means, and wherein the bayonet attachment means of the accessory comprises at least two bayonet lugs corresponding to the cut outs.

It is another object of the invention that alignment of the accessory inlets to the cartridge outlets takes place in one position only to avoid cross contamination. This object is attained with a device wherein said bayonet attachment means at the dispensing apparatus or cartridge and at the accessory have means for coded alignment of the accessory to the dispensing apparatus or cartridge.

Other objects and improvements of the device are defined in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be explained in more detail hereinafter with reference to a drawing of embodiments.

FIGS. 1-6 show a first embodiment of the invention with a rotatable mixer housing, wherein

FIG. 1 is a longitudinal section of a mixer,

FIG. 2 is a view of the inlet end of the mixer,

FIG. 3 is a longitudinal section of a cartridge,

FIG. 4 is a top view of the cartridge of FIG. 3 with distanced outlets and ring-shaped bayonet means,

FIG. 5 is a longitudinal section of a cartridge having two containers with different cross-sectional areas,

FIG. 6 is a top view of the cartridge of FIG. 5 with distanced outlets and ring-shaped bayonet means.

FIGS. 7-13 show a second embodiment of the invention comprising a coupling ring, wherein

FIG. 7 is a longitudinal section of a mixer,

FIG. 8 is a view of the inlet end of the mixer,

FIG. 8a is a view of an inlet end of the mixer according to an embodiment in which the inlets have different sizes,

FIG. 9 is a longitudinal section of a cartridge with distanced outlets and ring-shaped bayonet means,

US 6,186,363 B1

3

FIG. 9a is a detailed view of a cartridge with distanced outlets of different size,

FIG. 10 is a top view of the cartridge of FIG. 9 with a nose piece,

FIG. 11 is a top view of a coupling ring,

FIG. 12 is a section of the coupling ring of FIG. 11,

FIG. 13 is a longitudinal section of a variant of the mixer of FIG. 7 and 8 attached to the cartridge of FIGS. 5 and 6 having containers with different cross-sectional area.

FIGS. 14-19 show a third embodiment of the invention with a locking ring permanently attached to the cartridge, wherein

FIG. 14 is a longitudinal section of a cartridge with distanced outlets,

FIG. 15 is a top view of the cartridge of FIG. 14,

FIG. 16A is a view on the mixer side of a locking ring to be attached to the cartridge,

FIG. 16B is a view on the cartridge side of the locking ring of FIG. 16A,

FIG. 17 is a section of the locking ring according to the line XVII-XVII of FIG. 16B,

FIGS. 18 and 19 show in two longitudinal sections at 90° to each other a mixer attached to the cartridge of FIG. 14 with the locking ring of FIGS. 16A-17, in the locked position.

FIGS. 20-25 show three embodiments of a closure cap for the cartridge, wherein

FIGS. 20-21 show as first embodiment a two part closure cap in a longitudinal section and a view on its cartridge side face,

FIGS. 22-23 show as second embodiment a one part closure cap for use with a coupling ring in a longitudinal section and a view on its cartridge side face.

FIGS. 24-25 show as third embodiment a one part closure cap for use with a locking ring attached to the cartridge in a longitudinal section and a view on its cartridge side face.

FIGS. 26-28 show an alternative embodiment of the invention with a ring-shaped bayonet socket at the rotatable mixer housing, wherein

FIG. 26 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 27 is a view of the inlet end of the mixer, and

FIG. 28 is a top view of the cartridge of FIG. 26.

FIGS. 29-31 show a further embodiment of the invention with a ring-shaped bayonet socket at the cartridge, wherein

FIG. 29 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 30 is a view of the inlet end of the mixer, and

FIG. 31 is a top view of the cartridge of FIG. 29.

FIGS. 32-34 show a further embodiment of the invention with a ring-shaped bayonet socket at the cartridge, wherein

FIG. 32 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 33 is a view of the inlet end of the mixer, and

FIG. 34 is a top view of the cartridge of FIG. 32.

FIGS. 35-37 show an further embodiment of the invention with a sector-shaped bayonet socket at the cartridge, wherein

FIG. 35 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 36 is a top view of the cartridge of FIG. 35, and

4

FIG. 37 is a view of the inlet end of the mixer.

FIGS. 38-40 show an alternative embodiment of the invention with a sector-shaped bayonet socket at the cartridge, wherein

FIG. 38 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 39 is a top view of the cartridge of FIG. 38, and

FIG. 40 is a view of the inlet end of the mixer.

FIGS. 41-44 show a further embodiment of the invention with a coupling ring, wherein

FIG. 41 is a longitudinal section of a mixer,

FIG. 42 is a longitudinal section of a coupling ring,

FIG. 43 is a top view of the coupling ring of FIG. 42, and

FIG. 44 is a longitudinal section of the mixer attached to a partially shown cartridge via the coupling ring.

FIGS. 45-47 show a further embodiment of the invention with a sector-shaped bayonet socket at the mixer, wherein

FIG. 45 is a longitudinal section of a mixer attached to a partially shown cartridge,

FIG. 46 is a top view of the cartridge of FIG. 41, and

FIG. 47 is a view of the inlet end of the mixer.

FIGS. 48-58 show several further coding means at both the cartridge and the mixer for preventing cross-contamination by erroneous attachment of the mixer onto the cartridge, wherein

FIG. 48 is a top view of a cartridge like in FIG. 39, with additional coding means,

FIG. 49 is a section of the inlet end of a mixer like in FIG. 38, with additional coding means,

FIG. 50 is a view of the inlet end of the mixer of FIG. 49,

FIGS. 51 and 52 show a variant of the coding means at the cartridge and mixer.

FIGS. 53 and 54 show a further variant of the coding means at the cartridge and mixer.

FIGS. 55 and 56 show a further variant of the coding means at the cartridge and mixer.

FIGS. 57 and 58 show a further variant of the coding means at the cartridge and mixer.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1-2 show a mixer 1 comprising a mixer housing 2, a mixer element group 3, the mixer outlet 4 and a mixer inlet section 5 with two separated inlet parts 6 and 7, which are integral with a properly aligned separating element 3S of the mixer element group 3. This mixer is attached to the cartridge by matching the mixer different width bayonet lugs 10, 11 to the different width bayonet sockets 19, 20 while pressing the mixer onto the cartridge and by rotating the mixer housing 2. The separated inlet parts 6 and 7 and the mixer element group 3 with the separating element 3S do not rotate. Separating element 3S serving in this embodiment as a separating means for guiding each chemical component separately to the first dividing element 3D of the mixer element group 3.

The mixer housing is provided with longitudinal ribs 8 that end at the larger diameter 9 of the mixer housing 2. The two lateral ends of the ribs are formed as bayonet lugs 10 and 11 cooperating with the bayonet retaining means of the cartridge. As follows from FIG. 2, the two lugs do not have the same width, lug 10 being larger than lug 11. As will be shown later, the different width of the lugs enable a coded alignment and attachment of the mixer to the cartridge.

US 6,186,363 B1

5

The mixer element group 3 is connected to the separated inlet parts 6 and 7 and is disposed in such a way within the housing that the housing itself is rotatable around the mixer element group 3 with attached inlet parts 6 and 7, which are arranged at the inlet side of the first mixer element 3S serving in this embodiment as a separating means for guiding each component separately to the first dividing element 3D of the mixer element group 3.

In FIG. 3, the cartridge 12 comprises two cylindrical containers or chamber 13 of equal cross-sectional areas for a 1:1 metering ratio ending in two individual, separate cylindrical and distal outlets 14 and 15. The outside shapes of the distal outlets 14 and 15 of the cartridge correspond to the respective inside shapes of the separate inlets 6 and 7 of the mixer, (see FIG. 1) whereby the inlets of the mixer fit over the outlets of the cartridge for tightly sealed connections. A reverse arrangement, where the inlet parts 6 and 7 fit into the outlet openings 14 and 15 is also possible.

In FIG. 4, the bayonet means 16 at the cartridge comprises a ring-shaped bayonet socket 17 with two internal recesses 18 and a circular opening with two diametrically opposed different width bayonet cutouts 19 and 20 for receiving the corresponding different width bayonet lugs 10 and 11, (see FIG. 1), of the mixer, allowing coded introduction of the mixer in one predetermined position only. The flange parts 21 adjacent to the cutouts serve as bayonet retaining means for securing the lugs of the mixer.

The ring-shaped bayonet means provides, in particular, for increased strength of the bayonet retaining means and increased structural rigidity of the outlet end of the cartridge when, during dispensing, the hydraulic forces transmitted from the attached mixer are at a maximum. This arrangement is a substantial improvement in comparison with the prior art bayonet prongs.

FIGS. 5 and 6 show a variant to the embodiment shown in FIGS. 1-4 in that the containers 22 and 23 of cartridge 24 have different cross-sectional areas for metering ratios other than 1:1.

In both described cases, in order to attach the mixer to the cartridge, the mixer can only be aligned with its bayonet lug widths corresponding to the different width cut outs of the bayonet sockets, then pressed onto the cartridge such that when the mixer is in place and the outlets and inlets are connected, the mixer housing 2 is rotated by 90° for the engagement of the bayonet lugs 10, 11 in the bayonet retaining means 21 of the cartridge. This attachment method prevents contamination of one component by the other at the mixer-cartridge interface yet enabling a quick coded attachment of the mixer.

FIGS. 7 and 8 show in a second embodiment a mixer 25 comprising a mixer housing 26, a mixer element group 3, a mixer outlet 4, and a mixer inlet section 27. This mixer is fixed to the cartridge 35 (see FIG. 9) with the aid of a separate coupling ring (see FIGS. 11 and 12). The coupling ring 31 is provided with two bayonet lugs 32 and 33 corresponding to the bayonet cutouts 19, 20, respectively of the bayonet attachment means 16 at the cartridge. For better manual gripping, ribs 34 are provided on the outer cylindrical surface.

It follows in particular from FIG. 7 that the mixer inlet section 27 comprises two cylindrical, individual inlet openings 28, 29 at the inlet side face of the first mixer element 3S serving in this embodiment as a separating means for guiding each component separately to the first dividing element 3D of the mixer element group 3. A slot 30 provides for a coded alignment of the mixer in regard to a cartridge.

6

Cartridge 35 (see FIGS. 9 and 10) is the same as cartridge 1 of FIG. 1 with the exception that the bottom of the bayonet attachment means 16 comprises a nose piece 36 corresponding to the slot 30 at the mixer (see FIGS. 7 and 8), for coded alignment of the mixer.

When connecting the mixer to the cartridge, the nose piece 36 on the cartridge fits into slot 30 of the mixer inlet section 27. This coded connection method assures not only one alignment possibility but also axial mixer attachment without rotation of the mixer housing, thus preventing contamination of one component by the other at the cartridge/mixer interface.

There are other coding means possible at the dispensing apparatus or cartridge and at the accessory for the coded alignment of the accessory to the dispensing apparatus or cartridge, e.g. pins or protruding parts of all kind fitting into a recess or cavity or slot. The coding means may also take the form of differently shaped, similar or dissimilar sized inlets and outlets as described later in the specification.

FIG. 13 shows a mixer 38 attached to a cartridge 75 having containers 76 and 77 with different cross-sectional areas, as a variant to the embodiment shown in FIGS. 5-12 in that the mixer inlet section 37 of mixer 38 has a separating means within the mixer, which separating means comprises separated inlet chambers 39, 40, respectively having different cross-sectional areas, and lodged within a smaller combined diameter than the cartridge outlet with corresponding openings for each chamber for material to pass through.

The aforementioned separating means serves to maintain separation of the material flows up to the first dividing element 3D of the mixer element group 3. This separating means can have chambers with equal cross-sectional areas or have a cross-sectional area ratio other than 1:1. For example, the ratio of the cross-sectional areas of the separating chambers can be adapted to the cross-sectional areas of the containers 76 and 77 of cartridge 75, respectively to its metering ratio. The separating means is fixedly connected to the mixer element group 3.

The cartridge 75 has the same attaching means as in FIGS. 5 and 6, and the mixer 38 is attached to the cartridge by means of the coupling ring 31.

The third embodiment of the invention according to the FIGS. 14-19 comprises a locking ring 51 that is snapped onto and permanently attached to the cartridge 42. The cartridge 42 comprises two cylindrical containers or chambers 43 of equal cross-sectional area, two distal outlets 45 and 46, and an attaching means 47 for attaching the locking ring 51 and for limiting its rotational movement. The form of the attaching means 47 is a circular edge 49 with two lugs 44 of same width and arranged around the two distal outlets with a circular undercut 48 at its base.

The locking ring 51 (see FIGS. 16A and 16B) and 17, snaps over circular edge 49 of the attaching means of the cartridge and remains attached to it. The locking ring 51 has an inner circular groove 52 forming a cartridge side edge 53 and a mixer side edge 54. The cartridge side edge 53 has two opposed cutouts 55 the width of which corresponds to the lugs 44 of the attaching means whereby the inner diameter of the cartridge side edge 53 is slightly smaller than the outer diameter of the circular edge 49 of the attaching means of the cartridge. For snapping the locking ring to the cartridge, the ring is positioned so that the cutouts of its cartridge side edge are placed above the lugs of the attaching means and the ring is then pushed onto the cartridge so that the remaining cartridge side edge of the locking ring slides into the circular undercut 48 of the attaching means. The locking ring is also provided with a serration 58 for better manual gripping.

US 6,186,363 B1

7

The mixer side edge 54 has two opposite cutouts 56 and 57 of different width corresponding to the lugs 10 and 11 of the mixer for insertion in one position only. These two cutouts are arranged at 90° to the cutouts 55 of the cartridge side edge. Thus, when the mixer 59 is to be attached to the locking ring on the cartridge and the locking ring is rotated by 90°, the remaining inside flange parts of both the cartridge side edge and the mixer side edge serve as bayonet retaining means to encompass the mixer lugs 10 and 11 as well as the lugs 44 of the attaching means 47 of the cartridge for strong securement.

FIGS. 18 and 19 show cartridge 42 of FIG. 14 with a mixer 59, which is similar to mixer 1 of FIG. 1 with the same mixer inlet section 5 with separate female inlets 6 and 7, except that the housing 60 is not rotatable around the integral internal parts of the mixer and has no ribs 8, and the two bayonet lugs 10 and 11 are of different widths. FIG. 18 shows the mixer introduced within the locking ring 51 with the locking ring in its locked position and FIG. 19 shows a section along the line XIX—XIX in FIG. 18 of the same assembly at 90°. It is evident that a mixer with separated inlet chambers can be attached likewise and also that a cartridge may be one having containers with different cross-sectional areas as in FIG. 5.

The above described system of the coded attachment of the mixer also allows for the coded attachment of closure caps, adapters etc., thus preventing cross contamination and allowing closure cap re-use.

The first embodiment of a coded closure cap 61, FIGS. 20 and 21, consists of two parts. The insert 62 has two male plugs 63 for closing the outlets of a cartridge, for example the distanced outlets 14 and 15 of cartridge 12 of FIG. 3.

In this embodiment it is shown how the sealing effect of a plug at the cartridge outlet can be improved by providing the male plug 63 with a second rim 63A reaching over the female cartridge outlet. The provision of such a male plug with a circumferential rim is of course not limited to this example.

The rotatable attaching means has two bayonet lugs 64 and 65 of different widths corresponding to the lugs 10 and 11 of mixer 1 of FIG. 1. The outer surface of the cap is provided with ribs 66 and a collar 70 for better gripping. The coded attachment of the closure cap to cartridge 12 or 24 is analogous to the attachment of mixer 1.

The second embodiment, FIGS. 22 and 23, consists of a coded closure cap 67, which also has two plugs 68 for closing the outlets of a cartridge, for example the distanced male outlets 14 and 15 of cartridge 35 of FIG. 9, and a slot 69 similar to slot 39 at mixer 25 for coded cooperation with nose piece 36 of cartridge 35. The outer surface of the cap is also provided with a collar 70 for better manual gripping. The attachment of the cap to cartridge 35 is achieved with coupling ring 31 of FIG. 11, analogous to the attachment of mixer 25 to that cartridge.

The third embodiment of a coded closure cap 71, FIGS. 24 and 25, is similar to the second embodiment and comprises two plugs 72 for closing the distanced male outlets 45 and 46 of cartridge 42 of FIG. 14. FIG. 25 shows the cartridge side of the closure cap with two bayonet lugs 73, 74 of different width and diametrically opposed on the edge facing the cartridge. This closure cap is attached by means of the locking ring 51 of FIGS. 18 and 19 and is also provided with a collar 70 for better manual gripping.

The ring-shaped bayonet attachment means of the cartridge ensures a better stability of its outlet area and stronger retaining of the bayonet lugs compared with prior art bayonet attachment means.

8

In the case of utilizing the advantages of the ring-shaped bayonet socket alone and without the need for coded attachment, the bayonet lugs 10 and 11, 32 and 33, 64 and 65 at the mixer or closure cap or accessory as well as the corresponding bayonet cutouts 19 and 20 at the retaining means at the cartridge or 56 and 57 at the locking ring 51, may have the same widths. This applies also in the case when more than two lugs and corresponding cutouts are used, for example three or four respectively.

The FIGS. 26-28 show a further embodiment of the invention with an inverse bayonet arrangement as compared with those of the bayonet arrangement of the mixer and cartridge according to FIGS. 1-4. FIG. 26 shows a mixer 80 comprising a mixer housing 81 with mixer outlet 4 and a mixer inlet section 82 containing two separated inlet parts 83 and 84 followed by a separating element 3S, which in turn is fixedly attached to a properly aligned element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by matching the coding means of mixer and cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 81 of the mixer about the integral internal mixer parts comprising separate female inlets 83 and 84, the separating element 3S and the mixer element group 3. The mixer element group or part thereof could also be prealigned and be fixedly assembled within the mixer housing.

The mixer housing 81 is provided with longitudinal ribs 8, which end at the larger diameter 85. The larger end of the mixer housing has a nose piece 89, which provides a highly visible coded guide for alignment and insertion into the slotted-prong 90 of the cartridge. The mixer housing 81 is also provided with a ring shaped bayonet socket attachment means 100 comprising two bayonet flange parts 94 and 95 acting as bayonet retaining means, having two cut outs 96 and 97 in between.

The cartridge 86 has two cylindrical containers 87 and 88 with the distanced outlets 14 and 15 for fitting and sealing within the mixer inlet section 82. The cartridge front 86A is provided with a slotted prong 90 and a guide piece 91 for preventing incorrect insertion of the mixer and further with two bayonet flanges 92 and 93 with tapered wedge shaped edges, corresponding in width with the mixer cutouts 96 and 97, and with reduced diameter cutouts 98 and 99 in between.

For attaching the mixer to the cartridge, the mixer inlet part 82 is introduced into the cartridge by aligning the nose piece 89 of the mixer housing within the slotted prong 90 while the part 91 acts as a guide piece as the mixer inlets are pushed onto and over the cartridge distanced male outlets 14 and 15 such that the cartridge flanges 92 and 93 correspond to and enter within the mixer cutouts 96 and 97. Upon rotating the mixer housing, the mixer bayonet flange parts 94 and 95 progressively move against the cartridge flanges 92 and 93, because of their tapered wedge shaped depth, forcing the mixer 80 against the cartridge front 86A. During this mixer to cartridge attachment, the mixer housing 81 rotates 90° about the stationary integral internal mixer parts.

The above bayonet arrangement, wherein the ring-shaped bayonet socket is at the accessory, as shown for a rotating mixer housing, can also be used in analogous manner for previously shown embodiments and for the closure caps, with the exception of the locking ring solutions. Alternative coding means arranged around the outer periphery of the mixer housing are possible or is achieved by different widths of cutouts and matching flange parts.

FIGS. 29-31 show a further embodiment wherein the mixer is provided with male inlet parts fitting into and sealing within the female cartridge outlets.

US 6,186,363 B1

9

FIG. 29 shows a mixer 101 comprising a mixer housing 102 with mixer outlet 4 and a mixer inlet section 103 containing two separate male inlets 104 and 105 followed by a separating element 3S which in turn is fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by matching the coding means of the mixer to the coding means of the cartridge, by pressing the mixer onto the cartridge and by rotating the mixer housing 102 about the integral internal mixer parts comprising separate male inlets 104 and 105, the separating element 3S and the mixer element group 3. The mixer element group or part thereof could also be prealigned and be fixedly assembled within the mixer housing.

The mixer housing 102 is provided with longitudinal ribs 8, which end at the larger diameter 106, the two lateral ends of which are formed as bayonet lugs 107 and 108, FIG. 30, cooperating with the bayonet retaining means of the cartridge. The bayonet lugs do not have the same width, lug 107 being larger.

The cartridge 109, FIG. 31, has two cylindrical containers 110 and 111 with the distanced female outlets 112 and 113 for filling and sealing over the male mixer inlets 104 and 105. The cartridge front 114 is provided with the same bayonet means 16 as the cartridge of FIG. 4, comprising a ring shaped bayonet socket.

FIGS. 32-34 show a further embodiment wherein the mixer is provided with a male and a female inlet part fitting and sealing into/over the female/male cartridge outlets.

FIG. 32 shows a mixer 115 comprising a mixer housing 116 with outlet 4 and a mixer inlet section 117 containing a separate male inlet 118 and a separate female inlet 119 followed by separated chambers 117A and 117B, which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 116 about the integral internal mixer parts comprising separate male inlets 118 and 119, the separated chambers 117A and 117B and the mixer element group 3. The mixer element group or part thereof could also be prealigned and be fixedly assembled within the mixer housing.

The mixer housing 116 is provided with longitudinal ribs 8, which end at the larger diameter 120, the two lateral ends of which are formed as bayonet lugs 121 and 122, FIG. 33, cooperating with the bayonet retaining means of the cartridge. The bayonet lugs do not have the same width, bayonet lug 121 being larger.

The cartridge 123 has two cylindrical containers 124 and 125 with one distanced male outlet 126 and one distanced female outlet 127 for, respectively, fitting and sealing within the separate female inlet 119 and over the separate male inlet 118 of the mixer. The cartridge front 128, FIG. 34, is provided with the same bayonet means 16 as the cartridge of FIG. 4, comprising a ring shaped bayonet socket.

The embodiments of FIGS. 35-43 show sector-shaped bayonet sockets instead of complete ring-shaped ones. The function and the attaching of the accessory are the same as in the previous embodiments, so that the three different embodiments of the bayonet means are illustrated in one respective example of mixer and cartridge. It is obvious that the sector-shaped bayonet socket and similar means can be provided on all other embodiments also.

FIG. 35 shows a mixer-cartridge assembly with a mixer 130 comprising a mixer housing 131 with outlet 4 and a mixer inlet section 132 containing two separate male inlets

10

133 and 134 followed by separating chambers 133A and 134A which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 131 about the integral internal mixer parts comprising separate male inlets 133 and 134, the separated chambers 133A and 134A and the mixer element group 3. The mixer element group or part thereof could also be prealigned and be fixedly assembled within the mixer housing.

The mixer housing 131 is provided with longitudinal ribs 8, which end at the larger diameter 135, the two lateral ends of which are formed as bayonet lugs 136 and 137, FIG. 37, cooperating with the sector-shaped bayonet sockets 145, 146, serving as bayonet retaining means of the cartridge. The bayonet lugs have the same width and are provided each with a rib 136A and 137A at it's end which both strengthen each lug and acts as a stop as well as ensuring that the mixer can be turned and attached in one direction only. The upper surface of the lugs may have inclined surface parts so as to enforce the locking ability by an axial load. Corresponding inclined surface parts may also be located on the corresponding surface of the cartridge sector shaped bayonet sockets.

The cartridge 138 has two cylindrical containers 139 and 140 with two distanced female outlets 141 and 142 for receiving and sealing over the separate male inlets 133 and 134. The cartridge front 143, FIG. 36, is provided with bayonet means comprising sector-shaped bayonet sockets 145, 146 which act as prongs and are closed on one side by a rib 145A and 146A which connects to the cartridge end wall so as to stiffen and increase the strength of the bayonet prong. The cutouts 149 and 150 between the sector shaped bayonet sockets allow for the introduction of the mixer bayonet lugs 136 and 137.

In this embodiment the bayonet lugs and the sector shaped bayonet sockets have approximately the same width. The coding is achieved by other coding means on the mixer and on the cartridge. The cartridge front 143 is provided with a T-shaped protrusion 151 arranged between the two outlets and the mixer inlet face is provided with a similar protrusion 152 arranged off center between the mixer inlets, see FIGS. 36 and 37.

The two T-shaped coding means allow the attachment of the mixer in one orientation only since, when putting the mixer onto the cartridge such that when the two protrusions are laying one upon the other, they will prevent the introduction of the mixer inlets into the cartridge outlets and also any contact between the cartridge outlets and the mixer inlets or plugs of closure means thus preventing cross contamination and prohibiting mixer/accessory attachment. It is obvious that the coding protrusions can have any shape other than a T-form, and could be e.g., in the form of a keyway allowing only one defined position in which to introduce the mixer having a corresponding protrusion, or two differently shaped keyways and corresponding protrusions.

The coded alignment can be facilitated by visual coding means, e.g., a marking 153 at the cartridge outlet end and a marking 154 at the bayonet lug 137 of the mixer on the same side as the coding protrusion.

In the embodiment of FIGS. 38-40, the coding is achieved by cutouts of different widths between the lugs. FIG. 38 shows a mixer-cartridge assembly with a mixer 155 with a mixer housing 156, outlet 4 and integral internal mixer parts comprising two separate inlets 157 and 158

US 6,186,363 B1

11

ending into a disc-shaped flange and followed by separated chambers 157A and 158A which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 156 about the integral internal mixer parts. The mixer element group 3 or part thereof, may also be prealigned and fixedly assembled within the mixer housing.

The mixer housing 156 is provided with longitudinal ribs 8, which end at the larger diameter 159, the two lateral ends of which are formed as bayonet lugs 160 and 161, FIG. 40, cooperating with the sector shaped bayonet retaining means of the cartridge. In this FIG. 38 and also in FIGS. 13, 32, 35 and 45 it is shown that the inlet end of the mixer housing has not only one cylindrical enlargement but two, e.g., one 159 at the inlet, lodging and sealing against the separate inlets 157, 158, followed by the second part 159A having an intermediate diameter and lodging and sealing against the separating means 157A, 158A. The bayonet lugs have the same widths but the gaps or cutouts 194, 195 between them are different, corresponding to the different widths of the sector shaped bayonet sockets on the cartridge.

These bayonet lugs 160, 161, can be provided each with a rib 167, FIG. 40, on the reverse side of the mixer inlet which both strengthen the lug and act as stop as well as limiting rotation in one direction only so as to prevent the mixer from being attached at 180° to the correct alignment. The upper surface of the lugs may have inclined parts, not shown, so as to enforce the locking and sealing ability by an axial force. Corresponding inclined parts, not shown, may also be located on the corresponding surface of the cartridge sector shaped bayonet sockets.

The cartridge 162 has two cylindrical containers 163 and 164 with two distanced female outlets 165 and 166 for receiving and sealing over the separate male inlets 157 and 158. The cartridge front 168, FIG. 39, is provided with bayonet means, comprising two sector-shaped bayonet sockets.

In FIG. 39, the bayonet means at the cartridge comprises two diametrically opposed sector-shaped bayonet sockets 169 and 170 acting as bayonet prongs for the bayonet lugs of the mixer, the two sockets having different widths, socket 169 having the greater width. The two cut outs 171 and 172 between the sockets allow for the introduction of the corresponding mixer bayonet lugs 160 and 161 into the sector shaped bayonet sockets 169, 170. As shown in this Figure, the passages of the bayonet sockets 169 and 170 commence as straight passages but become curved from the mid point onwards so as to achieve a greater strength against bayonet lug axial forces.

The passages can be wholly curved, without straight parts, and wholly or partly curved passages can also be provided on the ring-shaped bayonet attachment means.

In order to prevent any inadvertent contact whatsoever of the mixer or accessory inlet or inlets with the cartridge outlet or outlets by any form of tilting or tipping of one against the other during incorrect alignment the larger cut out 195 at the mixer is provided with a V-shape nose 192 corresponding to a V-shape incision 193 at the larger socket 169 such that the mixer is kept outside of the narrower bayonet socket 170 by the V-shape nose 192.

In this embodiment also the coded alignment can be facilitated by visual coding means, e.g., marking 153 at the cartridge and marking 154 at the corresponding lug.

In case no univocal attachment of a mixer to the cartridge 162 is necessary the cut outs between the lugs of the mixer

12

must be large enough to fit over the larger retaining means of the cartridge, whereas the visual coding means rest the same as previously described.

FIGS. 41-44 show a similar arrangement to that of the FIGS. 38-40 except that the mixer 200 is separate from coupling ring 196, the latter being rotated about the stationary mixer during the final rotary locking attachment of the coupling ring bayonet lugs 160A, 161A, into the sector shaped bayonet sockets 169, 170 of the cartridge 162.

FIG. 41 shows mixer 200 with the outlet 4 and comprising a housing 201 containing the mixer element group 3 in alignment with inlet part 197, the latter only partially contained within the mixer housing and comprising separate male inlets 157B, 158B and separate chambers 157C, 158C. A ridge 198 lodges and seals the inlet part 197 within the mixer housing. The coupling ring 196 is preassembled and prealigned with the mixer inlet part 197 via a groove 199, FIG. 41, in the coupling ring 196. FIG. 43 shows coupling ring 196 with the same coded bayonet lugs 160A, 161A, cut outs 194A, 195A, visual coding 154 and V-shape nose coding 192A as used in the embodiment according to FIG. 40.

FIG. 44 shows the mixer 200 and the cartridge 162 when assembled together. Prior to such assembly, the coupling ring 196 may be pre-assembled to the mixer under sufficient tension such that both components are held together in the correct relative alignment for initial visual coded and initial axial mechanical coded contact and attachment of the mixer inlets 157B, 158B to the cartridge outlets 165, 166 on the cartridge prior to the final rotary locking attachment of the coupling ring as described above. In this embodiment therefore, there is no rotation of the mixer housing 201 about the mixer inlet part 197 and element group 3 during attachment.

In the embodiment according to FIGS. 45-47 the sector-shaped bayonet sockets are at the mixer and the bayonet lugs at the cartridge, in analogy to the embodiment according to FIGS. 26-28.

FIG. 44 shows a mixer-cartridge assembly with a mixer 173 comprising a mixer housing 174 with outlet 4 and a mixer inlet section 175 containing the integral internal parts comprising two separate male inlets 176 and 177 followed by separated chambers 176A and 177A which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 174 about the separate male inlets 176 and 177, the separated chambers 176A and 177A and the mixer element group 3. The mixer element group or part thereof could also be pre-aligned and be fixedly assembled within the mixer housing.

The mixer housing 174 is provided with longitudinal ribs 8, which end at the larger diameter 178, the two lateral ends of which are formed as two diametrically opposed sector-shaped bayonet sockets 179 and 180 (see FIG. 43) acting as prongs which are both closed at one side by a rib 179A and 180A connecting to the mixer wall so as to stiffen and increase the strength of the bayonet prong. The cut-outs 181 and 182, between the sockets, allow for the introduction of the cartridge bayonet lugs cooperating with the bayonet retaining means of the mixer.

The cartridge 183 has two cylindrical containers 184 and 185 with two distanced female outlets 186 and 187 for fitting and sealing over the separate male inlets 176 and 177. The cartridge front 188, FIG. 42, is provided with bayonet means, comprising sector-shaped bayonet lugs 190 and 191

US 6,186,363 B1

13

having the same width and each being provided with a rib 190A and 191A at its end which strengthens the lug and act as a stop as well as limiting rotation in one direction only so as to prevent the mixer from being attached at 180° to the correct alignment. The upper surface of the lugs may have inclined surface parts, not shown, so as to enforce the locking ability by an axial load. Corresponding inclined surface parts, not shown, may also be located on the corresponding surface of the mixer sector shaped bayonet sockets.

The lugs and the cutouts have approximately the same width. Thus, the required coding is achieved by other coding means on the mixer and on the cartridge. Therefore the cartridge front 188 is provided with the T-shaped protrusion 151 arranged between the two distanced female outlets and the mixer inlet race is provided with a similar shaped protrusion 152 arranged off center between the mixer inlets. See FIGS. 46 and 47.

The two T-shaped coding means allow the introduction of the mixer in one position only, since the placing of the mixer onto the cartridge is such that, when the two protrusions are laying one upon the other, they will prevent the introduction of the mixer separate male inlets into the cartridge distanced female outlets as well as any contact between the cartridge outlets and the mixer inlets, thus prohibiting cross contamination and mixer/accessory attachment. It is obvious that the coding protrusions can have any shape other than a T-form.

There are situations where the T-shaped coding protrusion give not a 100% protection to warrant no cross-contamination. FIGS. 48-58 show several coding protrusions, which are believed to warrant that no cross-contamination can occur even if the mixer is introduced onto the cartridge in the wrong sense. To this end the coding protrusions are arranged thus that no tilting around the axis connecting the centers of the two outlets of the cartridge, which could cause this contamination.

The cartridge 210 of FIG. 48 is similar to the cartridge 162 of FIG. 39 and has the same two cylindrical containers with two distanced female outlets 165 and 166 for receiving and sealing over the separate male inlets 157 and 158. The cartridge front diametrically opposed sector-shaped bayonet sockets 169 and 170 acting as bayonet prongs for the bayonet lugs of the mixer, the two sockets having different widths, socket 169 having the greater width. The two cutouts 171 and 172 between the sockets allow for the introduction of the corresponding mixer bayonet lugs 160 and 161 into the sector shaped bayonet sockets 169, 170. As shown in this Figure, the passages of the bayonet sockets 169 and 170 commence as straight passages but become curved from the mid point onwards so as to achieve a greater strength against bayonet lug axial forces.

In addition to the cartridge of FIG. 39, the front of this cartridge 210 is provided with a coding protrusions 212, consisting of two pins 213 arranged symmetrically to the axis connecting the centers of the outlets but asymmetrically as regards the transversal middle axis, e.g., on the side of one outlet.

FIG. 49 shows a mixer 214 similar to the mixer 155 of FIG. 38 with a mixer housing 156, outlet 4 and integral internal mixer parts comprising two separate inlets 157 and 158 followed by separated chambers 157A and 158A, which in turn are fixedly attached to a properly aligned first dividing element 3D of the mixer element group 3. Also this mixer is attached to the cartridge by pressing the mixer onto the cartridge and by rotating the mixer housing 156 about the integral internal mixer parts. The mixer element group 3 or

14

part thereof, may also be prealigned and fixedly assembled within the mixer housing.

The mixer housing 156 is provided with longitudinal ribs 8, which end at the larger diameter 159, the two lateral ends of which are formed as bayonet lugs 160 and 161 cooperating with the sector shaped bayonet retaining means of the cartridge. This mixer can also have two enlargement, e.g., one 159 at the inlet, lodging and sealing against the separate inlets 157, 158, followed by the second part 159A having an intermediate diameter and lodging and sealing against the separating means 157A, 158A. The bayonet lugs have the same widths but the gaps or cut outs 194, 195 between them are different, corresponding to the different widths of the sector shaped bayonet sockets on the cartridge, and have also ribs.

In addition to the mixer of FIG. 38 the inlet part of this mixer 214 is provided with the same coding protrusions 215 as those of the cartridge, consisting of two pins 216 and arranged in accordance to the pins 213 of the cartridge such that the mixer can only be introduced the correct way with regard to the other coding means without the possibility of tilting if introduced by force the wrong way.

The FIGS. 51-58 show further arrangement and forms of coding protrusions 212, 215, whereby the cartridge as well as the mixer are always the same as in FIGS. 48-50 and only the coding protrusions are provided with numerals, the other parts being the same.

FIGS. 51 and 52 show a coding protrusions 212 on the cartridge front consisting of two bars 217 arranged symmetrically to the transversal middle axis of the cartridge but asymmetrically to the axis connecting the centers of the outlets. The two bars 218 of the mixer inlet part are arranged in accordance to those of the cartridge such that introduction and attachment of the mixer onto the cartridge is only possible in one position.

FIGS. 53 and 54 show a coding protrusions 212 on the cartridge front consisting of two D-shaped protrusion 219 arranged symmetrically to the transversal middle axis of the cartridge but asymmetrically to the axis connecting the centers of the outlets, with both flat sides looking in one direction. The two D-shaped protrusions 220 of the mixer inlet part are arranged in accordance to those of the cartridge such that introduction and attachment of the mixer onto the cartridge is only possible in one position.

FIGS. 55 and 56 show a coding protrusions 212 on the cartridge front consisting of a male plug 221 and a female plug 222 arranged symmetrically. The male plug 223 and the female plug 224 of the mixer inlet part are arranged in accordance to those of the cartridge such that introduction and attachment of the mixer onto the cartridge is only possible in one position.

FIGS. 57 and 58 show a particularly effective coding protrusions 212 on the cartridge front consisting of a bar 225 on one side of the axis connecting the centers of the outlets and two spaced bars 226 on the other side of this axis, arranged symmetrically to the transversal middle axis of the cartridge. The single bar 227 and the double bar 228 of the mixer inlet part are arranged in accordance to those of the cartridge such that introduction and attachment of the mixer onto the cartridge is only possible in one position.

All these coding protrusions prevent efficiently tilting of the mixer during attachment to the cartridge and hence cross-contamination.

The coded alignment can be facilitated by visual coding means, e.g., the marking 153 at the cartridge, opposite the protrusion and the marking 154 at the lug of the mixer near the coding protrusion.

US 6,186,363 B1

15

It follows from the embodiment according to FIGS. 32-34 that the mixer inlets and the cartridge outlets may be either female or male respectively and it follows also that it is possible to provide the mixer with one female and one male inlet fitting over/into the corresponding male/female outlet of the cartridge.

This latter arrangement provides for a further coding means since only one position is possible for matching the mixer or closure means to the cartridge. This mixed arrangement of coding and coding means is independent from the manner of attachment with a coupling ring, locking ring or rotatable mixer housing.

While the different widths of the bayonet lugs provide for a distinct coding means, it might be advantageous to enhance this effect by visualisation of the coding by optical means such as different colors, a notch and a marking or by providing one lug of the accessory with a cut-out and the corresponding nose at the cartridge bayonet means. This can be done either for visual marking one of the coding parts or for the coding itself.

Cartridges separated with one single wall, e.g., according to U.S. Pat. No. 5,333,760, cannot exclude chemical migration through such a single wall separation barrier and therefore separation at the cartridge outlets is not sufficient to prevent migration and therefore a reaction within the cylinders during storage.

It follows in particular from the FIGS. 5, 14, 26, 29, 32, 35, 38 and 41 that it is advantageous to provide for a single piece cartridge consisting of two complete, preferably cylindrical containers which are substantially separated by an air gap L in between, see e.g. FIG. 32. This assures a total chemical separation along the whole length where the chemicals are contained, ahead of the cylinder pistons, all the way to the top of the outlets where, during storage, a closure means is installed. During dispensing, this separation is further maintained within the mixer up to the first dividing element 3D of the mixer element group.

The invention however, is not limited to air gap separated containers and applies as well to cartridges with containers separated by one single wall according to FIG. 3.

It follows from the above description that the inventive cartridge to accessory attachment combination provides in particular for cartridge containers separated by an air gap up to and including the individual outlets and for a port to port coded alignment for same or dissimilar size ports, with no cross-contamination caused by rotation or random attachment, while maintaining separation past the interface and well into the mixer, so as to hinder the spreading of any possible reaction and plugging of the components at the interface and back into the cartridge outlets. This combination also provides optimization of the mixing performance especially, but not uniquely, for ratios other than 1:1.

While the foregoing description and the drawing of the cartridge embodiments pertained to multiple component cartridges with side-by-side containers the teaching of the present invention is not limited thereto and can be applied as well to cartridges with concentric containers or otherwise arranged and formed containers.

However, the principle of coded attachment ensures both the correctly aligned connection of a mixer or accessory to cartridge outlets since only one position of the mixer or accessory is possible and, in the case of the re-connection of mixer or closure cap to a cartridge, eliminates the possibility of cross-contamination.

Furthermore, and in respect to mixers, all the above described embodiments have the advantage of comprising

16

the minimum number of parts and of being compact, resulting in low molding and assembly costs since the whole inlet section comprising the separating means and the mixer element group is made in one piece. Also the integral construction of this internal part ensures proper alignment thus providing optimum mixing efficiency.

In the case of the first embodiment according to FIG. 1 when a relatively long mixer element group is used and where rotational friction between this mixer element group and the mixer housing might cause problems, it may be preferable to separate a part or the whole of the mixer element group from the separating means of the inlet section such that a part or the whole of the mixer element group may be fixedly assembled within the housing and therefore it rotates with the housing while connecting the mixer to the cartridge.

In this case—and as seen from the mixer inlet to the mixer outlet—the leading edge of the first element of the mixer element group, or of a portion thereof, must be fixedly assembled within the housing in a pre-aligned position. Therefore, after rotating the housing so as to attach the mixer to the cartridge, correct alignment of the elements is achieved such that each of the two material streams leaving the separating means, or the first element group attached to the separating means, will be evenly divided by the leading edge of the first element of the element group, or portion thereof attached to the housing, for optimum mixing efficiency.

It is evident that instead of cylindrical inlets and outlets, D-shaped or differently shaped similar or dissimilar sized inlets and outlets are possible (see FIGS. 8a and 9a). In certain embodiments, the respective inlets of the mixer housing or the outlets of the cartridge have different sizes or shapes providing the coded alignment between the cartridge and the mixer. Furthermore, the same principle can also be used for a dispensing device, or cartridge, for more than two components.

We claim:

1. A mixer for a cartridge, the cartridge having a plurality of chambers each having an outlet, the mixer comprising:
 - a housing;
 - a mixer element disposed in said housing;
 - a plurality of inlets for engagement with the outlets of the cartridge and mounted on said housing;
 - a bayonet coupling on said housing for detachably connecting said mixer to the multichamber cartridge, said bayonet coupling having locked and unlocked positions;
 - a coding element that permits said inlets of said housing to be aligned and connected to the outlets of the cartridge in only one orientation; and
 - said coding element comprising each of said inlets being of different configuration from the other.
2. A mixer according to claim 1, wherein said coding element comprises said inlets being of different shape from each other.
3. A mixer according to claim 1, wherein said coding element comprises said inlets being of different size from each other.
4. A dispensing device, comprising:
 - a cartridge,
 - a mixer, and
 - complementary coding elements formed on said cartridge and mixer,
 said cartridge comprising:

US 6,186,363 B1

17

a plurality of chambers each having an outlet, and
 a first bayonet coupling;
 said mixer comprising:
 a housing with a plurality of inlets corresponding in
 number to said outlets, each inlet being configured to
 engage a respective one of said outlets,
 a mixer element disposed in said housing, and
 a second bayonet coupling complementary with said
 first bayonet coupling of said cartridge, said first
 bayonet coupling being detachable from said second
 bayonet coupling and together forming a detachable
 bayonet assembly; and
 wherein said coding elements permit said inlets of said
 mixer to be aligned and connected to the respective
 outlets of said cartridge in only one orientation and
 wherein said coding elements comprise said outlets
 being of different size relative to each other and said
 respective inlets being configured to conform thereto.

18

5. A cartridge for a mixer, the mixer having a plurality of
 inlets, the cartridge comprising:
 a plurality of chambers each having an outlet for engage-
 ment with the inlets of the mixer; and
 a bayonet coupling on said cartridge for detachably con-
 necting said cartridge to the mixer;
 each said outlet of said chambers being of a different
 configuration from each other said outlet to permit each
 said outlet to be aligned and connected to the respective
 inlets of the mixer in only one orientation.
 6. A cartridge according to claim 5, wherein each said
 outlet of said chambers is of a different size from each other
 said outlet.
 7. A cartridge according to claim 5, wherein each said
 outlet of said chambers is of a different shape from each
 other said outlet.

* * * * *

**UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA**

NOTICE OF ASSIGNMENT TO UNITED STATES MAGISTRATE JUDGE FOR DISCOVERY

This case has been assigned to District Judge Andrew Guilford and the assigned discovery Magistrate Judge is Fernando M. Olguin.

The case number on all documents filed with the Court should read as follows:

SACV11- 305 AG (FMOx)

Pursuant to General Order 05-07 of the United States District Court for the Central District of California, the Magistrate Judge has been designated to hear discovery related motions.

All discovery related motions should be noticed on the calendar of the Magistrate Judge

=====:

NOTICE TO COUNSEL

A copy of this notice must be served with the summons and complaint on all defendants (if a removal action is filed, a copy of this notice must be served on all plaintiffs).

Subsequent documents must be filed at the following location:

☐ **Western Division**
312 N. Spring St., Rm. G-8
Los Angeles, CA 90012

☒ **Southern Division**
411 West Fourth St., Rm. 1-053
Santa Ana, CA 92701-4516

☐ **Eastern Division**
3470 Twelfth St., Rm. 134
Riverside, CA 92501

Failure to file at the proper location will result in your documents being returned to you.

**UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA**

Sulzer Mixpac USA, Inc., and
Sulzer Mixpac AG

PLAINTIFF(S)

v.

Dent Mart Int'l Inc., and Kenny S. Lee and L&C
Dental Supply, Inc. and Sung H. Lee and Saeyang
Microtech Co. Ltd.

DEFENDANT(S).

CASE NUMBER

SACV11-00305AG(FMOx)

SUMMONS

TO: DEFENDANT(S): _____

A lawsuit has been filed against you.

Within 21 days after service of this summons on you (not counting the day you received it), you must serve on the plaintiff an answer to the attached ☒ complaint ☐ _____ amended complaint ☐ counterclaim ☐ cross-claim or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff's attorney, Christopher Kondon, Christina Goodrich, whose address is 10100 Santa Monica Blvd., 7th Floor, Los Angeles, CA 90067. If you fail to do so, judgment by default will be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

Clerk, U.S. District Court

FEB 23 2011

Dated: _____

JULIE PRADO

By: _____

Deputy Clerk

(Seal of the Court)

[Use 60 days if the defendant is the United States or a United States agency, or is an officer or employee of the United States. Allowed 60 days by Rule 12(a)(3)].

**UNITED STATES DISTRICT COURT, CENTRAL DISTRICT OF CALIFORNIA
CIVIL COVER SHEET**

I (a) PLAINTIFFS (Check box if you are representing yourself <input type="checkbox"/> SULZER MIXPAC USA, INC., and SULZER MIXPAC AG		DEFENDANTS DENT MART INT'L INC., and KENNY S. LEE and L&C DENTAL SUPPLY, INC. and SUNG H. LEE and SAEYANG MICROTECH CO. LTD.	
(b) Attorneys (Firm Name, Address and Telephone Number. If you are representing yourself, provide same.) Christopher Kondon (SBN 172339), Christina Goodrich (SBN 261722) K&L Gates LLP, 10100 Santa Monica Boulevard, 7th Floor Los Angeles, CA 90067 -- Tel: 310-552-5000		Attorneys (If Known)	

II. BASIS OF JURISDICTION (Place an X in one box only.) <input type="checkbox"/> 1 U.S. Government Plaintiff <input checked="" type="checkbox"/> 3 Federal Question (U.S. Government Not a Party) <input type="checkbox"/> 2 U.S. Government Defendant <input type="checkbox"/> 4 Diversity (Indicate Citizenship of Parties in Item III)	III. CITIZENSHIP OF PRINCIPAL PARTIES - For Diversity Cases Only (Place an X in one box for plaintiff and one for defendant.) <table style="width:100%; border: none;"> <tr> <td style="width:35%;"></td> <td style="width:10%; text-align: center;">PTF</td> <td style="width:10%; text-align: center;">DEF</td> <td style="width:45%;"></td> <td style="width:10%; text-align: center;">PTF</td> <td style="width:10%; text-align: center;">DEF</td> </tr> <tr> <td>Citizen of This State</td> <td align="center"><input type="checkbox"/> 1</td> <td align="center"><input type="checkbox"/> 1</td> <td>Incorporated or Principal Place of Business in this State</td> <td align="center"><input type="checkbox"/> 4</td> <td align="center"><input type="checkbox"/> 4</td> </tr> <tr> <td>Citizen of Another State</td> <td align="center"><input type="checkbox"/> 2</td> <td align="center"><input type="checkbox"/> 2</td> <td>Incorporated and Principal Place of Business in Another State</td> <td align="center"><input type="checkbox"/> 5</td> <td align="center"><input type="checkbox"/> 5</td> </tr> <tr> <td>Citizen or Subject of a Foreign Country</td> <td align="center"><input type="checkbox"/> 3</td> <td align="center"><input type="checkbox"/> 3</td> <td>Foreign Nation</td> <td align="center"><input type="checkbox"/> 6</td> <td align="center"><input type="checkbox"/> 6</td> </tr> </table>		PTF	DEF		PTF	DEF	Citizen of This State	<input type="checkbox"/> 1	<input type="checkbox"/> 1	Incorporated or Principal Place of Business in this State	<input type="checkbox"/> 4	<input type="checkbox"/> 4	Citizen of Another State	<input type="checkbox"/> 2	<input type="checkbox"/> 2	Incorporated and Principal Place of Business in Another State	<input type="checkbox"/> 5	<input type="checkbox"/> 5	Citizen or Subject of a Foreign Country	<input type="checkbox"/> 3	<input type="checkbox"/> 3	Foreign Nation	<input type="checkbox"/> 6	<input type="checkbox"/> 6
	PTF	DEF		PTF	DEF																				
Citizen of This State	<input type="checkbox"/> 1	<input type="checkbox"/> 1	Incorporated or Principal Place of Business in this State	<input type="checkbox"/> 4	<input type="checkbox"/> 4																				
Citizen of Another State	<input type="checkbox"/> 2	<input type="checkbox"/> 2	Incorporated and Principal Place of Business in Another State	<input type="checkbox"/> 5	<input type="checkbox"/> 5																				
Citizen or Subject of a Foreign Country	<input type="checkbox"/> 3	<input type="checkbox"/> 3	Foreign Nation	<input type="checkbox"/> 6	<input type="checkbox"/> 6																				

IV. ORIGIN (Place an X in one box only.)
☒ 1 Original Proceeding
 ☐ 2 Removed from State Court
 ☐ 3 Remanded from Appellate Court
 ☐ 4 Reinstated or Reopened
 ☐ 5 Transferred from another district (specify):
 ☐ 6 Multi-District Litigation
 ☐ 7 Appeal to District Judge from Magistrate Judge

V. REQUESTED IN COMPLAINT: JURY DEMAND: ☒ Yes ☐ No (Check 'Yes' only if demanded in complaint.)
CLASS ACTION under F.R.C.P. 23: ☐ Yes ☒ No
 MONEY DEMANDED IN COMPLAINT: \$

VI. CAUSE OF ACTION (Cite the U.S. Civil Statute under which you are filing and write a brief statement of cause. Do not cite jurisdictional statutes unless diversity.)
 Lanham Act 15 USC Sec. 1051 et seq. and 35 USC Sec. 271 et seq.

VII. NATURE OF SUIT (Place an X in one box only.)

OTHER STATUTES <input type="checkbox"/> 400 State Reapportionment <input type="checkbox"/> 410 Antitrust <input type="checkbox"/> 430 Banks and Banking <input type="checkbox"/> 450 Commerce/ICC Rates/etc. <input type="checkbox"/> 460 Deportation <input type="checkbox"/> 470 Racketeer Influenced and Corrupt Organizations <input type="checkbox"/> 480 Consumer Credit <input type="checkbox"/> 490 Cable/Sat TV <input type="checkbox"/> 810 Selective Service <input type="checkbox"/> 850 Securities/Commodities/Exchange <input type="checkbox"/> 875 Customer Challenge 12 USC 3410 <input type="checkbox"/> 890 Other Statutory Actions <input type="checkbox"/> 891 Agricultural Act <input type="checkbox"/> 892 Economic Stabilization Act <input type="checkbox"/> 893 Environmental Matters <input type="checkbox"/> 894 Energy Allocation Act <input type="checkbox"/> 895 Freedom of Info. Act <input type="checkbox"/> 900 Appeal of Fee Determination Under Equal Access to Justice <input type="checkbox"/> 950 Constitutionality of State Statutes	CONTRACT <input type="checkbox"/> 110 Insurance <input type="checkbox"/> 120 Marine <input type="checkbox"/> 130 Miller Act <input type="checkbox"/> 140 Negotiable Instrument <input type="checkbox"/> 150 Recovery of Overpayment & Enforcement of Judgment <input type="checkbox"/> 151 Medicare Act <input type="checkbox"/> 152 Recovery of Defaulted Student Loan (Excl. Veterans) <input type="checkbox"/> 153 Recovery of Overpayment of Veteran's Benefits <input type="checkbox"/> 160 Stockholders' Suits <input type="checkbox"/> 190 Other Contract <input type="checkbox"/> 195 Contract Product Liability <input type="checkbox"/> 196 Franchise REAL PROPERTY <input type="checkbox"/> 210 Land Condemnation <input type="checkbox"/> 220 Foreclosure <input type="checkbox"/> 230 Rent Lease & Ejectment <input type="checkbox"/> 240 Torts to Land <input type="checkbox"/> 245 Tort Product Liability <input type="checkbox"/> 290 All Other Real Property	TORTS PERSONAL INJURY <input type="checkbox"/> 310 Airplane <input type="checkbox"/> 315 Airplane Product Liability <input type="checkbox"/> 320 Assault, Libel & Slander <input type="checkbox"/> 330 Fed. Employers' Liability <input type="checkbox"/> 340 Marine <input type="checkbox"/> 345 Marine Product Liability <input type="checkbox"/> 350 Motor Vehicle <input type="checkbox"/> 355 Motor Vehicle Product Liability <input type="checkbox"/> 360 Other Personal Injury <input type="checkbox"/> 362 Personal Injury-Med Malpractice <input type="checkbox"/> 365 Personal Injury-Product Liability <input type="checkbox"/> 368 Asbestos Personal Injury Product Liability IMMIGRATION <input type="checkbox"/> 462 Naturalization Application <input type="checkbox"/> 463 Habeas Corpus-Alien Detainee <input type="checkbox"/> 465 Other Immigration Actions	TORTS PERSONAL PROPERTY <input type="checkbox"/> 370 Other Fraud <input type="checkbox"/> 371 Truth in Lending <input type="checkbox"/> 380 Other Personal Property Damage <input type="checkbox"/> 385 Property Damage Product Liability BANKRUPTCY <input type="checkbox"/> 422 Appeal 28 USC 158 <input type="checkbox"/> 423 Withdrawal 28 USC 157 CIVIL RIGHTS <input type="checkbox"/> 441 Voting <input type="checkbox"/> 442 Employment <input type="checkbox"/> 443 Housing/Accommodations <input type="checkbox"/> 444 Welfare <input type="checkbox"/> 445 American with Disabilities - Employment <input type="checkbox"/> 446 American with Disabilities - Other <input type="checkbox"/> 440 Other Civil Rights	PRISONER PETITIONS <input type="checkbox"/> 510 Motions to Vacate Sentence <input type="checkbox"/> 530 General Habeas Corpus <input type="checkbox"/> 535 Death Penalty <input type="checkbox"/> 540 Mandamus/Other <input type="checkbox"/> 550 Civil Rights <input type="checkbox"/> 555 Prison Condition FORFEITURE/PENALTY <input type="checkbox"/> 610 Agriculture <input type="checkbox"/> 620 Other Food & Drug <input type="checkbox"/> 625 Drug Related Seizure of Property 21 USC 881 <input type="checkbox"/> 630 Liquor Laws <input type="checkbox"/> 640 R.R. & Truck <input type="checkbox"/> 650 Airline Regs <input type="checkbox"/> 660 Occupational Safety/Health <input type="checkbox"/> 690 Other	LABOR <input type="checkbox"/> 710 Fair Labor Standards Act <input type="checkbox"/> 720 Labor/Mgmt. Relations <input type="checkbox"/> 730 Labor/Mgmt. Reporting & Disclosure Act <input type="checkbox"/> 740 Railway Labor Act <input type="checkbox"/> 790 Other Labor Litigation <input type="checkbox"/> 791 Empl. Ret. Inc. Security Act PROPERTY RIGHTS <input type="checkbox"/> 820 Copyrights <input type="checkbox"/> 830 Patent <input type="checkbox"/> 840 Trademark SOCIAL SECURITY <input type="checkbox"/> 861 HIA (1395ff) <input type="checkbox"/> 862 Black Lung (923) <input type="checkbox"/> 863 DIWC/DIWW (405(g)) <input type="checkbox"/> 864 SSID Title XVI <input type="checkbox"/> 865 RSI (405(g)) FEDERAL TAX SUITS <input type="checkbox"/> 870 Taxes (U.S. Plaintiff or Defendant) <input type="checkbox"/> 871 IRS-Third Party 26 USC 7609
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SA CV11-00305

FOR OFFICE USE ONLY: Case Number: _____

AFTER COMPLETING THE FRONT SIDE OF FORM CV-71, COMPLETE THE INFORMATION REQUESTED BELOW.

**UNITED STATES DISTRICT COURT, CENTRAL DISTRICT OF CALIFORNIA
CIVIL COVER SHEET**

VIII(a). IDENTICAL CASES: Has this action been previously filed in this court and dismissed, remanded or closed? ☒ No ☐ Yes

If yes, list case number(s): _____

VIII(b). RELATED CASES: Have any cases been previously filed in this court that are related to the present case? ☒ No ☐ Yes

If yes, list case number(s): _____

Civil cases are deemed related if a previously filed case and the present case:

(Check all boxes that apply) ☐ A. Arise from the same or closely related transactions, happenings, or events; or

☐ B. Call for determination of the same or substantially related or similar questions of law and fact; or

☐ C. For other reasons would entail substantial duplication of labor if heard by different judges; or

☐ D. Involve the same patent, trademark or copyright, and one of the factors identified above in a, b or c also is present

IX. VENUE: (When completing the following information, use an additional sheet if necessary.)

(a) List the County in this District; California County outside of this District; State if other than California; or Foreign Country, in which **EACH** named plaintiff resides.

☐ Check here if the government, its agencies or employees is a named plaintiff. If this box is checked, go to item (b).

County in this District:*	California County outside of this District; State, if other than California; or Foreign Country
	Sulzer Mixpac USA, Inc. - Rockingham County, Salem, NH Sulzer Mixpac AG - Rotkreuz, Switzerland

(b) List the County in this District; California County outside of this District; State if other than California; or Foreign Country, in which **EACH** named defendant resides.

☐ Check here if the government, its agencies or employees is a named defendant. If this box is checked, go to item (c).

County in this District:*	California County outside of this District; State, if other than California; or Foreign Country
Dent Mart Int'l Inc. - Anaheim, CA (Orange Co.); Kenny S. Lee - LaMirada, CA (Los Angeles Co.); L&C Dental Supply - Anaheim, CA (Orange Co.); Sung H. Lee - Anaheim, CA (Orange Co.)	Saeyang Microtech Co. Ltd. - Dalseo-Ku, Daegu, Korea

(c) List the County in this District; California County outside of this District; State if other than California; or Foreign Country, in which **EACH** claim arose.

Note: In land condemnation cases, use the location of the tract of land involved.

County in this District:*	California County outside of this District; State, if other than California; or Foreign Country
Los Angeles County - Los Angeles, CA (importation of counterfeit products seized at U.S. Customs Long Beach, Los Angeles, Port) Orange County - Anaheim, California	

* Los Angeles, Orange, San Bernardino, Riverside, Ventura, Santa Barbara, or San Luis Obispo Counties

Note: In land condemnation cases, use the location of the tract of land involved

X. SIGNATURE OF ATTORNEY (OR PRO PER):  Date February 23, 2011

Notice to Counsel/Parties: The CV-71 (JS-44) Civil Cover Sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law. This form, approved by the Judicial Conference of the United States in September 1974, is required pursuant to Local Rule 3-1 is not filed but is used by the Clerk of the Court for the purpose of statistics, venue and initiating the civil docket sheet. (For more detailed instructions, see separate instructions sheet.)

Key to Statistical codes relating to Social Security Cases:

Nature of Suit Code	Abbreviation	Substantive Statement of Cause of Action
861	HIA	All claims for health insurance benefits (Medicare) under Title 18, Part A, of the Social Security Act, as amended. Also, include claims by hospitals, skilled nursing facilities, etc., for certification as providers of services under the program. (42 U.S.C. 1935FF(b))
862	BL	All claims for "Black Lung" benefits under Title 4, Part B, of the Federal Coal Mine Health and Safety Act of 1969. (30 U.S.C. 923)
863	DIWC	All claims filed by insured workers for disability insurance benefits under Title 2 of the Social Security Act, as amended; plus all claims filed for child's insurance benefits based on disability. (42 U.S.C. 405(g))
863	DIWW	All claims filed for widows or widowers insurance benefits based on disability under Title 2 of the Social Security Act, as amended. (42 U.S.C. 405(g))
864	SSID	All claims for supplemental security income payments based upon disability filed under Title 16 of the Social Security Act, as amended.
865	RSI	All claims for retirement (old age) and survivors benefits under Title 2 of the Social Security Act, as amended. (42 U.S.C. (g))